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THE LACQUER INDUSTRY OF JAPAN.

By J. J. QUIN.

[Read October 12, 1880.]

Among the Art Industries of Japan, that of lacquering undoubtedly holds the first place, not only as furnishing occupation to thousands of people in various parts of the country, but also as displaying skill, patience, and in many cases the highest kind of artistic excellence. Its utility also is undoubted, for a large number of the utensils used in Japanese households owe their strength and durability to the lacquer which covers them.

The object of the present paper is to sketch in a cursory manner the rise and progress of this art, the localities where it has principally flourished, and to give a short description of the mode of making and painting lacquer ware.

The extent and ramifications of the lacquer industry, as well as its great antiquity, preclude the possibility of giving as detailed a description as the importance of the subject deserves.

I am indebted for a great portion of the following information to a work called *Kō-gei Shi-riyō*, and to notes furnished by a lacquer manufacturer, which have been supplemented by personal observation of the ware in its various stages.

For convenience of reference it is proposed to divide the subject into the following headings:—

- 1.—History and origin of lacquer ware.
- 2.—The various changes that have taken place in the styles of gold lacquer.

- 3.—Names of the principal kinds of lacquer ware and the localities in which they have flourished.
- 4.—Various kinds of lacquer.
- 5.—Cultivation of the lacquer tree, and the mode of obtaining the lacquer varnish.
- 6.—Various woods used in making lacquer ware.
- 7.—Method of making lacquer ware: (1) Black lacquer; (2) Red lacquer; (3) *Hira-makiye*; (4) *Togi-dashi*; (5) *Taka-makiye*.
- 8.—Various kinds of gold dust, etc., used in the ornamentation of lacquer ware.
- 9.—Tools and other articles used in the manufacture of lacquer ware.
- 10.—Noted workers in lacquer, and the period in which they lived.
- 11.—A few noted pieces of old lacquer.

I.—HISTORY OF THE LACQUER TRADE.

It is not known whether the lacquer industry flourished previous to the time of the Emperor Jimmu, B. C. 660–581, *i.e.*, during the ages known as *Kamiyo* or times of the Gods, but it is mentioned in the old records, that during the reign of the Emperor Kō-an, who ascended the throne B. C. 392, and was the sixth Emperor from Jimmu Tennō, a person named Mitsune no Sukune was the first on whom the office of Chief of the Imperial Lacquer Department was conferred (*Urushi-be no Muraji*), but though this title existed, unfortunately it is not known what articles were manufactured.

The next notice of lacquer is during the reign of the Emperor Kō-toku, who came to the throne A.D. 645. In his time the names of all the offices were changed and that of *Urushi-be no Muraji* was altered to that of *Urushi-be no Tsukasa*. In the various provinces where the lacquer industry was carried on, lacquered articles were received by the Government in lieu of taxes, and a notification was issued that in future the joints of the Imperial coffins should be covered with lacquer. In this reign also, rules were established respecting the *Kammuri* or ceremonial head-covering, and mention is made of the pendant being stiffened with lacquer. From this time lacquer began to be used on numerous articles.

In the reign of the Emperor Temmu, A.D. 678-686, a workman whose name has not been preserved invented the manufacture of red lacquer, and he lacquered a set of shelves for the Emperor.

In the reign of the Emperor Mommu, A.D. 697-708, the officials of the Lacquer Department were divided into three grades, viz., *Urushi-be no kami*, *Jū*, and *Sakuran*. Twenty workmen were engaged, and orders were issued that all articles manufactured by these men should be certified by their names, and a prohibition was issued by the Government against the manufacture of lacquer except by these workmen.

During the reign of the Emperor Gemmō, A.D. 708-715, and the two following reigns, viz., those of the Empress Genshō, A.D. 715-723, and the Emperor Shōmu, A.D. 724-748, the lacquer industry made great progress, and five different coloured laquers were used. The practice of inlaying with mother-of-pearl, and of lacquering gold, silver, copper and leather, was adopted; while about this time, also, gold powdered and mixed with lacquer was applied to the articles. This was the origin of "lacquer drawing" (*makie*).

In the reign of the Emperor Kwammu, A.D. 782-806, the taste for lacquer ware spread greatly throughout the country, and great attention was paid to this industry.

In the following reign of the Emperor Heizei, A.D. 806-809, the Lacquer Department was incorporated with the *Takumi-riyō*, answering to the Public Works Department of the present day.

In the reign of the Emperor Daigo, A.D. 898-931, the lacquer industry made rapid strides, and it is mentioned that lacquered articles were largely received in lieu of taxes. It would appear, therefore, that at this period the restriction as to twenty workmen only being permitted to work in lacquer must have been removed, though there is no special mention of the fact in the records of that time.

In the reign of the Emperor Sujaku, A.D. 931-936, Taira no Masakado and Fujiwara no Sumitomo rebelled and made war, the first, in the eastern provinces (*Shimōsa*) and the latter in the western provinces (*Shikoku*), in consequence of which disturbances the lacquer industry in those districts and in the neighbouring provinces declined

greatly, and other articles had to be substituted for the lacquer work paid in yearly to the Government for taxes. Only the commonest articles for daily use continued to be manufactured.

At that time, however, the *Kuges* at Kiōto became very luxurious and fond of display, so that in that city alone the lacquer trade continued to prosper, and the manufacture of gold, silver and mother-of-pearl lacquer ware improved considerably. The attention paid to this branch of industry at Kiōto did not flag during the period extending from the reign of the Emperor Murakami, A.D. 947-968, to the reign of the Emperor Antoku, A.D. 1181-1185, and the fame of the Kiōto lacquer ware was such, that moneyed persons, and those who were fond of handsome furniture, induced numbers of the Kiōto workmen to come and settle in their provinces, and this tended greatly to the development of the lacquer trade.

The Bakufu (or Government of the Shōguns) was established during the reign of the Emperor Go-Tōka, A.D. 1186-1198, at Kamakura, and thither numbers of artisans in lacquer flocked eagerly, but they did not attain to the excellence of workmanship arrived at by the Kiōto tradesmen.

Disturbances broke out at Kiōto during the reign of the Emperor Chiūkiō, A.D. 1222, in consequence of which the lacquer industry received a check and declined for a time.

During the previous period, viz., between A.D. 947 and 1181, a number of priests as well as officials became very expert in working in lacquer, and they sold quantities of articles of their own manufacture.

In the reign of the Emperor Go-Kameyama, A.D. 1368-1392, Yamana Ujikiyo, and Ōuchi Yoshihiro, two powerful retainers of the Ashikaga family, built castles at Sakai, in the province of Idzumi, and the locality prospered greatly. Numerous workers in lacquer were attracted thither, and this to so great an extent that the ware made there acquired a high reputation.

During the reign of the Emperor Go-Hanazono, A.D. 1429-1464, the Shōgun Ashikaga Yoshimasa had a passion for lacquered articles. The best workers assembled round him in Kiōto, and as he gave large orders for all kinds of ware the industry was greatly stimulated, while the style and finish improved vastly.

During the reign of the Emperor Go-Tsuchi Mikado, A.D. 1465-1500, the country was disturbed. Yoshimasa, however, did not trouble himself about affairs of state, but devoted himself entirely to frivolous pleasures, the encouragement of the fine arts in general, and the manufacture of lacquer, so that this art continued to prosper in Kiōto. About this time the Chinese patterns and modes of working were copied and introduced, such as *Tsui-shu* (embossed red lacquer), *Tsui-koku* (embossed black lacquer), i.e., incised lacquer on wood, and several other methods of applying gold lacquer. [5]

During the first three quarters of the 16th century Japan was a constant scene of civil wars, which caused the lacquer trade to decline greatly, until the advent of Taikō Hideyoshi, who conquered the whole country and restored quiet, thus enabling the lacquer trade in Kiōto and the neighbourhood of Sakai to revive again. It continued to prosper during the reign of the Emperor Go-Yōzei, A.D. 1587-1611, when Iyeyasu came into power, and the lacquer industry flourished all over the country. From that date until now it has spread in a manner unknown in former times.

II.—CHANGES THAT HAVE TAKEN PLACE IN THE STYLE OF MANUFACTURING GOLD LACQUER.

What is understood as gold lacquer or *makiye* consists of pictures of flowers, trees, animals, landscapes, etc., painted on the lacquered article with gold dust. The date when this industry was commenced is unknown, but the oldest piece of gold lacquer now extant is a *kosa-bako*, or box for holding the scarf worn by Buddhist priests across the shoulder, formerly belonging to Shō-toku Tai-shi (b. 572, d. 621), and the next oldest is the sheath of a sword which belonged to the Emperor Shō-nu, A.D. 724-748: both of these pieces are preserved in the temple of Tō-dai-ji at Nara, in the province of Yamato. The term *makiye* was not used at that time, but the style is mentioned in old records as *mak-kin-rō*.

The mode adopted in lacquering the sheath was as follows: On the groundwork, which was black lacquer, figures of birds, animals,

flowers and plants were designed in rough angular gold dust; a second [6] coat of black lacquer was then given, and afterwards ground down till the picture appeared. This style is considered very interesting and curious, and differs materially from that in use later.

In the same temple are preserved also numerous lacquered articles, known by the name of *Hiyō-mon*. This ware was manufactured by cutting out the figures of flowers and plants on a thin gold plate, which was then lacquered on to the article. *Mak-kin rō*, properly so-called, is very rare, and it is evident from the specimens that no great excellence of workmanship had been attained up to that time.

After the Emperor Kwaminnu fixed the capital in Yamashiro (the modern Kiōto), A.D. 794, a taste for luxury and grandeur grew up, and it is recorded in old works that people wore swords, the sheaths of which were lacquered with gold—*Makiye Hei-jin*.

Up to the beginning of the 10th century the manufacture of lacquer had not attained any high degree of artistic excellence, but from the extant specimens dating from this period it can be seen that the gold powder was of a very much finer quality, and the painting was much more minute and elaborate than in the middle of the 8th century. The kind of powdered gold lacquer called *nushiji*, from its resemblance to the spotted skin of a pear, was introduced about the beginning of the 10th century. About the middle of the 10th century the nobles began to use articles of furniture covered with gold lacquer. The Emperor Kwan-zan (reigned 985-986, d. 1008) was extremely fond of good gold lacquer. Amongst the works he is said to have had made for himself were a landscape representing Hō-rai-zan, the Elysian Mountain, and figures of men with enormously long arms, and others with extraordinarily long legs, known in Chinese and Japanese fables. These pieces of workmanship were much admired at the time. In constructing these articles, the edges were for the first time covered with powdered silver or tin by a process called *oki-guchi*.

Great improvements were made in the art of lacquering during the reign of the Emperor Konoye (1142-56), and about this time figures were occasionally painted in gold lacquer; mother-of-pearl, also, and glass of many colours were inlaid on a groundwork of

nashiji, much more thickly sprinkled with gold than is ever done at the present day, as much as from 15 to 18 *momme* of gold dust (855 to 1026 grains) being used per square foot. A noble named [7] Doi Toshitomo, residing in Tōkiō, has at present in his possession a very fine box (*tebako*) attributed to this period. The groundwork of this box is thick *nashiji*, inlaid with various coloured shells: it is estimated that the gold dust used per square foot is considerably over 10 *momme* (570 grains).

During the reign of the Emperor Takakura, A.D. 1169-1180 nearly every article was lacquered with gold, and the nobles were, in the habit of having their bullock-carriages lacquered with gold open-work—*Hiyō-mon*. The art of lacquering in gold is considered to have arrived at its highest degree of perfection during the reign of the Emperor Go-Shirakawa, about the year A.D. 1175.

About the middle of the 15th century flourished the Shō-gun Ashikaga Yoshimasa, who, abandoning the reins of government to others, devoted himself to pleasure and the encouragement of the arts, and set the fashion of collecting antique curiosities. A marked change took place in the style of the gold lacquer. Previously the decoration had consisted for the most part of floral designs, but now landscapes, figures and architectural subjects came greatly into fashion. The term *Kane-maki* (metal appliqué) appears to have been sometimes employed to denote *makiye*.

Yoshimasa, who was a great patron of lacquer-ware, ordered a letter-box to be made for him covered with gold-figured lacquer on a rich ground of *nashiji*, which was considered a *chef d'œuvre*. To this period the first introduction of *Taka-makiye*, or raised gold lacquer, is also attributed.

As has already been observed, the civil wars which raged during the latter half of the 16th century greatly interfered with the progress of the arts, and the lacquer trade declined greatly. There was only one good workman at that time, one Igarashi Dō-ho: all the ware made by other workmen was vastly inferior to what had been produced in former days.

A celebrated work in lacquer, belonging to the second quarter of the 17th century, is the tomb of the Shō-gun Hidetada, still

existing in the Mausoleum created to his memory in what is now known as the 'Shiba Public Garden.' Hon-ami Kō-yetsu was an admirable contemporary worker in lacquer.

- [8] Towards the end of the 17th century the lacquer trade prospered greatly, and many judges assign the palm of excellence to the ware then manufactured. The ware of this period is spoken of by the name *Jō-ken-In-jidai*, signifying "of the time of Jō-ken-In," that being the posthumous name of the Shō-gun Tokugawa Tsunayoshi. A reading stand (*Kendai*) manufactured during this period was sent to the Vienna Exhibition, but the vessel in which it was being brought back was wrecked off the coast of Idzu, and the stand was not recovered for eighteen months afterwards, when it was ascertained not to have received the slightest damage from its long immersion—a fact which proves the excellence and durability of the ware made at that time.

About the beginning of the 18th century a style called *Giyō-bu Nashiji* was introduced, differing from the ordinary *nashiji*, in that small squares of gold leaf were applied instead of powdered gold. The name of *Giyō-bu Nashiji* was most probably given to this style of ware from a workman of this period residing at Yedo called *Giyō-bu Tarō*, by whom, as far as is known, it was first made. It met with a good deal of favour, but as the workmen strove principally after careful painting and extreme minuteness of detail, without paying so much attention to the artistic elegance of the design, it cannot properly be compared with what was manufactured during the preceding epoch.

III.—VARIOUS NAMES BY WHICH LACQUER WARE IS KNOWN.

Some kinds of lacquer take their names from a specialty in the mode of manufacture, others from the locality, others from the maker; and some kinds have always steadily improved, while other kinds have declined and gone out of fashion. Below are recorded some of the best known and most renowned kinds:—

"URUSHI-YE"—PICTURE LACQUER.—This kind consists, as its name implies, of all kinds of designs painted on the lacquered articles with different coloured lacquers. The date when this was first done is not known, but the earliest record of it is during the reign of the Emperor Daigo, who in the year A.D. 906 ordered sixteen flower-dishes of Picture lacquer. The next notice of this style of lacquer is met with in the records of the reign of the Emperor Takakura, [9] A.D. 1169-1180, when it is mentioned that a workman from Nambu in Ō-shū painted flowers, birds, grasses and trees, in red, green and yellow lacquer, on a black ground, and the production of this species of ware spread, from that period, over the whole country. In the year 1688 a man named Kan-shichi, in Yedo, was famed for painting representations of waves, and he gave his name to that kind of painting, calling it *Sei-gai-Kan-shichi*—Green sea Kan-shichi. In 1868 a certain Shibata Ze-shin discovered a method of painting in coloured lacquers on paper and silk, which must also be classed as *urushi-ye*.

"JŌGA-HANA URUSHI-YE."—This lacquer derives its name from the locality where it was made in the province of Etchū, in the district of Tonami, and like the former kind, consists of paintings of various designs on black lacquer in colours. This special kind flourished greatly a hundred years ago, and the trade was kept for many generations from about A.D. 1470 in the family of one Ji-go-za-ye-mon.

"MITSUTA YE"—Pictures painted with *Mitsuta*, a kind of lacquer obtained from a tree of that name not now known. The date when this species of painting was introduced is unknown, but in A.D. 756 the Empress Kō-ken presented several flower-trays of it to the temple of Tō-dai-ji at Nara. The method of making these trays was as follows: Cotton cloth was pasted over the wood and then lacquered, on the upper side of the tray white *Mitsuta* was applied, and over this various designs of flowers, trees, men, birds, etc., were painted in yellow lacquer. On the under part of the tray a quantity of designs were painted on the black lacquer in red *Mitsuta*. These trays are preserved in the temple at the present day. The fashion for this species of ware increased from the date mentioned above, till in the

year A.D. 795, when the Emperor Kwammu fixed the Imperial residence at Kiōto, and the existing fashions underwent a change and the taste for gold lacquer, *nashiji* and lacquering with mother-of-pearl came in. From that date the *Mitsuta-ye* gradually declined, and finally died out.

“CHŌ-MOKU”—CARVED WOOD.—The lacquer ware known as *Chō-moku* consisted in lacquering over with various colours carved wooden articles. The date when this method was introduced is not known, but it is mentioned as being much used in the year A.D. [10] 906. At that time the term *Chō-moku* was confined to small Japanese carved lacquered writing tables, but later the name came to be applied to any article treated in the same manner, *i.e.*, carved and then lacquered over.

“KAMAKURA BORI.”—This kind, first made at Kamakura in 1193, resembles the former in being carved and then lacquered. The carvings were principally of the Botan (*Paeonia Moutan*), Plum flowers, Water caltrop, etc., painted in red over black lacquer, which was always the foundation colour.

The ware known as *Echizen bori* does not differ from the above, but the kind called *Odawara bori* is very inferior to the others. The taste for all these kinds changed in the year 1573, since which date none has been manufactured.

“NAMBU NURI.”—This ware derives its name from the district where it was manufactured, namely, Nambu, in the province of Ō-shū. It is principally red lacquer, and specimens over six and seven hundred years old still exist. Among the wooden bowls or cups there are some very fine specimens, black outside and red within. On the outside, flowers, cranes, etc., are painted in red, green and yellow lacquer, while the ground work is dotted over with small squares of gold leaf. The colour of the red lacquer is considered very fine. This kind of lacquer was, and still is, made in various localities in Ō-shū, but it is all called Nambu lacquer. At the village of Jō-hō-ji, in Nambu, the trade continues to prosper at the present day.

“AIDZU NURI.”—The lacquer made at and near the town of Wakamatsu, in the province of Iwashiro, is known as Aidzu lacquer.

This industry was first introduced in the year 1591, when Gamō Ujisato became the *dai-miyō* of that province, and employed workmen to imitate the Nambu bowls. This style was continued till about the year 1706, when the workmen discontinued imitating Nambu ware and introduced a style of their own, by painting their designs in gold dust, since which date they attained great perfection. Since the opening of Japan to foreign trade in 1859, great attention has been paid to the manufacture, and large quantities of articles useful for export still continue to be produced.

"NEGORO NURI."—This ware derives its name from the temple of Negoro, in the district of Naka, province of Kii, where it was first made. In the year 1288, a number of monks migrated from [11] Kō-ya-san to Negoro, where they founded four monasteries and numerous temples, from which period the industry prospered greatly, and the ware was manufactured in large quantities. The principal articles produced were small Japanese eating tables (*zen*), bowls, cups, small jars and trays, for the most part in red lacquer, though black lacquer was occasionally used. In the year 1585, Hideyoshi attacked and dispersed the priests of Negoro, who had created disturbances, and they were mostly killed. The few survivors fled to a place in the province of Satsuma called Nejime, where vermilion was produced, and settling there, introduced the trade of making red lacquered bowls, of coarser quality, however, than the old Negoro ware. These bowls went by the name of *Satsuma wan*. The articles made did not find much favour, and the industry gradually died out. Subsequently, some Kiōto workmen imitated the Negoro ware, giving it the name of *Kiō-Negoro*. The manufacture has been continued by their descendants, and it is made and used at the present time.

At Yoshino, in the province of Yamato, a ware was manufactured in which, though certain deviations were made, the Negoro ware was the basis of the style adopted. It was called Yoshino-Negoro lacquer. There are specimens of this ware extant over 500 years old, and it is still manufactured in Yoshino to the present day.

"KUROYE NURI."—This ware is made at the village of Kuroye, in the district of Nagusa, province of Kii. Between 1624 and 1644

a lacquer workman first applied transparent lacquer on plain wood stained with persimmon juice and made many articles of furniture. This style came rapidly into favour, and was imitated in various localities. In 1840 the Dai-miyō of Ki-shū had a census taken of the lacquer workers in the village of Kuroye, when it was ascertained that the number amounted to more than 4,500 persons, besides over 2,000 journeymen who had come to settle from other parts of the country to earn a living. Since the opening of the country to foreign trade, gold lacquer has also been manufactured at Kuroye.

"SHUNKEI NURI."—This lacquer derives its name from the inventor, a workman of Sakai, in the province of Idzumi, who lived during the reign of the Emperor Go-Kameyama, A.D. 1368-1392. This ware, like the last, leaves the natural wood to be seen, and [12] the mode of manufacture was as follows:—The wood having been carefully smoothed and prepared, a coating of alum glaze was well rubbed in to fill up the pores of the wood, it was then coloured either with gamboge, or *Benigara* (red oxide of iron), mixed with persimmon juice; this was rubbed till it became polished. A coating of pure transparent lacquer, combined with a small proportion of *Ye* oil (from *Perilla ocymoides*), was then applied with a hard brush, and when dry it presented a beautifully polished surface. This invention was plentifully copied by the workmen of Sakai, and met with great favour and a ready sale. About the period extending from A.D. 1614-1644, a *chajin* (a master in the art of preparing powdered tea) named Kanamori Sō-wa collected a number of workers in this kind of lacquer at Takayama, in the province of Hida, and manufactured quantities of articles for use in tea-drinking. The workmen from Sakai lacquered trays of a colour between yellow and red, which were held in great repute, owing to the fine grain of the wood employed, and the ware obtained the name of Hida Shunkei. It rose rapidly in favour, and the quantity made increased yearly. The Hida workmen, moreover, copied a species of lacquer of a light yellow colour, over fine grained wood, manufactured at Noshiro, in the province of Dewa, and this ware became known as Hida Noshiro. Later, as time wore on, this ware, finding wide favour, was imitated in all parts of the country, but none of

it could compare in excellence with that made in Hida and at Noshiro. The places where the Shunkei ware was imitated are the following:—

Shimo Ichi Mura, province of Yamato.

Takeda Machi, province of Tajima.

Yamada Machi, province of Ise.

Shimo Ichi Moto Machi, Awa Mura and Kami Ichi-ge, province of Hitachi.

Kaini Shibotare Machi province of Shimotsuke.

Odaira and Yuda Machi, province of Iwashiro.

Hashiba Machi, province of Mutsu, and at Tōkiō.

This ware is still made in all the above named places.

“NOSHIRO NURI.”—This ware derives its name from the village of Noshiro, in the district of Yamato, province of Dewa, where it was first made. The date when this industry was introduced is unknown, but some say that during the reign of the Emperor Rei-gen, A.D. 1663-1686, a workman called Yamauchi San-ku-rō came from Hida [13] and introduced the manufacture. This ware is of a light yellow transparent lacquer, showing the grain of the wood, and the name of Noshiro Shunkei was given to it. This ware and that made in Hida, already mentioned, are the best in Japan. When this ware was first made, the articles were taken out to sea and lacquered on board junks, so as to prevent the possibility of any dust settling on them while drying. The things principally made were sets of shelves, large trays (*Hiro-buta*), *Jū-bako*, or nests of boxes fitting one on the other for holding food, trays, etc., which were made with great care, and met with much favour in the eyes of the Japanese. At the present time one Ishioka Shō-jū-rō, living at Noshiro, has the reputation of being the most skilful workman of the day.

“WAKASA NURI.”—This ware takes its name from the province of Wakasa, and is made in the town of Obama. It is imitated from a Chinese kind called *Zen-sei*. It was made with a mixture of red, green, blue, yellow and black lacquers, and presented a cloudy appearance: gold and silver leaf also were used in many cases, forming a floral design, and the ware was considered very handsome. The method adopted in the latter case was as follows:—The article

received a coat of lacquer of the colours required, upon which the leaf, flower, or spray of fir tree, etc., desired to be reproduced, was pressed while the lacquer was still fresh. It was then removed, and the lacquered article which had received the impression was set to dry. Afterwards gold or silver leaf was applied to the whole of the surface so prepared, and another coat of the coloured lacquer given. When dry, the whole was then ground down till the pattern came out. Over this a final coat of transparent lacquer was applied. Good ware is very hard. It was in great request from about 1624, and the demand has been steadily maintained. The articles principally made were cabinets, book-shelves, tables and *tebako*, boxes for holding papers, etc., and continual improvements and excellence of workmanship were aimed at. Of late years this ware has been imitated in the neighbourhood of Nikkō, but it cannot be compared to the Wakasa lacquer.

- [14] "TSUGARU NURI."—This ware is manufactured at the town of Hirosaki and the village of Tsukurimichi, in the district of Tsugaru, province of Mutsu. The origin of this ware is unknown; it resembles greatly the Wakasa lacquer in presenting a cloudy and spotted appearance, but in this ware gold and silver are not used. Of late years a kind called *nishiki* lacquer has been made, which consists in painting on the lacquer, birds, grasses, plants, etc., in colours. Numerous articles, long in the possession of, and made expressly for, the Lords of Tsugaru, were beautifully made, and though it has been imitated in various other localities, the articles produced cannot be compared with this ware for excellence of workmanship, hardness or durability. The principal articles made are tables, *tebako*, tobacco boxes, writing boxes, etc.

"NIKKŌ NURI."—This ware, somewhat resembling Wakasa lacquer, is made in the neighbourhood of Nikkō. The date of its first being manufactured is unknown, but ware made at the village of Hachi-ishi, in the neighbourhood, was ordered by Iyeyasu about the year 1600. This ware is rough in its finish, but is exceedingly hard, and still maintains a certain popularity.

"YOSHINO NURI."—This lacquer is made throughout the district of Yoshino, province of Yamato, but as in the former case, the pre-

cise date of commencing the industry is unknown. It consisted principally in the manufacture of cups and bowls in black lacquer, with devices painted in red lacquer. This ware is also made at Tawara, in the district of Toichi, and at Gojō, in the district of Uchi, in the same province.

"HINO NURI."—This ware is made at Hino, in the province of Ōmi. Date of commencing the manufacture not known. Originally cups and bowls were the chief articles made, but between 1688 and 1704 all kinds of table requisites were manufactured, and found a ready sale in the neighbouring provinces. About ten years later the manufacture prospered very greatly, and large quantities of the ware were made, but it cannot be compared to that made at Ōzaka or Kiōto, either in quality or finish.

"WAJIMA NURI."—This ware is made at Wajima, in the province of Noto, the original date of its invention being unknown. It consists only of red and black lacquer for all kinds of table requisites, but though plain, it is substantially made and the lacquer is hard, so that it is much liked by the Japanese. Since the opening [15] of the country to foreign trade, the artisans have not confined themselves to making table furniture only, but have made many other kinds of articles for general use.

"Zō-KOKU NURI."—This lacquer derives its name from a man called Tamakaji Zō-koku, who resided at Takamatsu, in the province of Sanuki, about 1624. This man, having learnt the Chinese method of lacquering, invented several improvements. The method used in making this ware was to lacquer over bamboo baskets (a wooden foundation was also sometimes used) either with red or black lacquer, and upon this surface floral designs were most minutely carved in the lacquer. Over this a coating of either the same or different coloured lacquer was applied, and then ground down and polished in such a manner that the carved pattern could be seen through. This is looked upon as very excellent workmanship. This man's younger brother and one of his sons attained great excellence in this ware, which is still made by the descendants of the originator, and the manufacture of which is confined to the one family.

"YAMANAKA NURI" derives its name from the place where it is manufactured, namely, Yamanaka, in the district of Inuma, province of Kaga. The date when this lacquer was first made is unknown. The ware consisted of articles of every-day use, and in 1858, when foreign trade commenced, various kinds of furniture were manufactured for export, and the trade still flourishes.

"Zō-GAN NURI."—This kind of lacquer is manufactured by inlaying silver or gold wire in the shape of birds, animals and flowers. This is afterwards covered over with black lacquer, and then ground down until the inlaid picture comes out. The earliest date of this style is unknown, but during the period extending from 1804-1818, a workman of Nagoya, in the province of Owari, manufactured it to great perfection, and lately workmen at Tōkiō have produced it in imitation of the old style.

"HA-RITSU SAIKU."—About the end of the 17th century or beginning of the 18th a man named Ha-ritsu, a native of Ise, invented a special kind, by inlaying various designs made of porcelain, lead, tin, horn or ivory, in the lacquer, and this style was much appreciated on account of its quaintness. Later, Ha-ritsu [16] moved to Tōkiō, leaving behind him a pupil called Mochizuki Han-zan, known also as Ha-ritsu the second, who manufactured even finer ware than his teacher. At the present day imitations are to be found everywhere.

"SURUGA NURI" was originally made at Fuchiu, now called Shidzuoka, in Suruga. The date of its origin is unknown. The ware consists of articles made of several different kinds of wood joined together and lacquered over, showing the grain of the wood: as the work, however, was roughly finished, it was never much appreciated. In the first year after the Restoration in 1868, the new head of the Tokugawa family moved there with his retainers, and this gave a great impetus to the lacquer trade. The workmen began to manufacture several kinds of lacquer ware, such as inlaying with mother-of-pearl and painting in various colours. The chief products at the present day are book-shelves, cabinets, ink boxes, and *ju-bako* (nests of boxes), of which large quantities are made.

"KUWANA BON."—This ware is manufactured at Kuwana, in

Isc, and according to tradition was first made there about the end of the 17th or beginning of the 18th century. This kind consists exclusively of round black lacquered trays, with a silver turnip lacquered on the upper surface. Later, gold was occasionally used, but these specimens are rare, and most of the devices are in silver, as at first. This ware was formerly so roughly finished that only the lower orders used it, but the workmanship has gradually improved so much that it has come to be generally used by the upper classes.

"TSUISHU AND TSUIKOKU" LACQUER.—It is said that in the reign of Go-Tsuchi Mikado (A.D. 1465-1501) a Kiōto workman named Mon-niu first manufactured this kind of ware. It consists of either red or black lacquer laid very thickly on the article, and afterwards, landscapes, flowers, birds, or figures were deeply carved in the lacquer in imitation of Chinese ware. Another ordinary kind consisted of black, red or green lacquer, on which a floral design was lightly carved, and this was called *Kō-ka Ryōkuyō*, "red flower, green leaf." There is also a kind of *Tsuishu* and *Tsuikoku* called *Hashiku bori*, the only difference being that the engraving is shallower than on the real ware; another kind is called *Guri*. The mode of manufacture was to lay on lacquer of various colours, mixed together, very thickly, and on this surface circular and [17] spiral patterns were carved. Between 1596-1615 a workman named Hei-jū-rō excelled so greatly in the manufacture of this style, i.e., *Tsui-shu*, that he took the name of *Tsui-shu Hei-jū-rō*. He was employed by Iye-yasu, and his descendants followed his trade. Between the years 1716 and 1736 this ware was greatly in fashion. At Kiōto there was a workman named *Tsui-shu-ya Ji-rō-ye-mon* who is said to have produced much finer ware than his ancestor Mon-niu; also *Tsui-shu Yō-sei* of Dai-ku chō in Yedo, and *Tsui-shu Tō-shichi* and *Tsui-shu Kan-shichi* of Nagasaki had the reputation at that time of being very skilful workmen. At the present day the Kiōto, Nagasaki and Tōkiō workmen manufacture an imitation of this ware.

"CHINKIN BORI."—In this kind of ware the pattern was very lightly engraved on the lacquer, and powdered gold was afterwards worked into the lines. The date when this kind was commenced is

unknown, but it is said to have been imitated from the Chinese. During the first half of the 18th century a Nagasaki workman, whose name has not been preserved, excelled in this kind of work, and towards its end a Tōkiō workman named Ninomiya Tō-tei manufactured this ware. Tō-tei carved the designs on the lacquer with rat's teeth instead of knives, and the articles made by him are still preserved and greatly prized. The design of one piece of lacquer made by him, representing a peony in fully bloom growing beside a rock on which a peacock is standing, is greatly admired as a beautiful piece of workmanship. In the year 1868 the manufacture of this ware started at Wajima, and it has of late been made in several other localities.

Besides the styles above mentioned there are, both in plain and gold lacquer, fully two hundred kinds slightly differing in appearance, and bearing distinctive names, derived either from their appearance, or the names of the persons who first introduced them, but it would be manifestly impossible to attempt any description of them within the limits of the present paper.

IV.—THE VARIOUS KINDS OF LACQUER.

[18] The name of *Ki-urushi*, or crude lacquer, is given to the sap taken from growing trees. It is used for various purposes, according to the age of the tree from which it is taken. The sap obtained from old trees is used in the manufacture of *Suki Urushi* or transparent lacquer. The manner in which the lacquer is treated to make it transparent is kept secret by the manufacturers. It is used for the final coat over *Nashiji*, or for any work in which transparency is required, such as trays, etc., showing the grain of the wood. It is also used in making red lacquer, and when colours are mixed with the crude lacquer, and in making *Wakasa* lacquer, already described.

The lacquer obtained from young trees is used for the first coat, and in making *Rō*, *Nuritate*, *Jō-hana*, *Chū-hana*, *Ge-hana*, *Naka-nuri*, and *Seshime*. A description of the composition of each kind is given below.

Rō—black lacquer—is made by adding to the pure lacquer the tooth dye used by women—*Haguro* (a liquor formed by steeping iron filings in vinegar)—and exposing it to the sun for about three days, stirring the mixture frequently; it then becomes a deep black. Without subsequent polishing, *Rō* does not present a shining surface.

Nuritate.—This is made by the addition to the pure lacquer of water that has been used with a whetstone (*To-midzu*) and containing the finest particles in suspension, together with a small quantity of powdered turpentine. This kind is used for under coatings.

Jō-hana is made by mixing with the lacquer a certain proportion of whetstone water and turpentine, with a little oil from the *Ye* plant (*Perilla ocymoides*). The whole is then exposed to the sun and stirred till it becomes black. *Chū-hana* and *Gō-hana* differ from the above only in having more oil added to the mixture, which produces a lustre without extra polishing, but detracts in proportion from the durability of the ware.

Naka-nuri is pure lacquer from which every particle of water is carefully extracted. It is then exposed to the light and stirred till it becomes black, or nearly so.

Seshime is a mixture of pure lacquer with finely powdered charred wood (not charcoal) and *funori*, a glaze made from seaweed.

Ki-seshime.—This kind is obtained from the lower branches of the lacquer tree, which are cut away, as well as from the branches of old trees that have been cut down. It is also sometimes called *Yada-urushi* or branch lacquer. The lacquer is drawn during the rainy season in the month of July, and from then till the month of September. When the sap ceases to flow freely from the trunks of the young trees, branches are cut off to relieve the tree. These are cut up into lengths and sunk in a stream. As the sap exudes, and rises from the sunken branches, it is gathered, and is called *Ki-seshime* lacquer. In former times the sap was obtained from the branches by pressing in a machine called *Seki*, which gave rise to the name of *Se-shime*. This kind of lacquer is scarce, not more than [19]

one tub of it being made for every hundred tubs of the ordinary kind.

In making *Makiye*, or gold lacquer, *Se-shime* lacquer obtained from young trees is used in the proportion of seven parts of pure *Se-shime* to three parts of foreign matter.

The following are some of the modes of using *Se-shime* lacquer:—

1. For priming coats, when the lacquer is exposed to the sun or placed before a fire to get rid of the water, and then mixed with *Benigara* (red oxide of iron), again exposed to the sun, and filtered through thin paper.

2. When the priming coat is required to be softened, some camphor is mixed with the above, and the whole filtered through thin paper.

3. The mode of preparing lacquer in the best manner for a first coat consists in mixing *Rō* (black lacquer) with the *Se-shime* lacquer. When this has become hard the outline of the device can then be easily traced. *Benigara* is mixed to enable the workman to see whether the lacquer is laid on thickly or not, and moreover it helps to dry the lacquer more quickly. When gold lacquer is to be painted on red lacquer ware, the lacquer for the first draft of the picture is mixed with powdered charcoal, and sometimes a yellow foundation is used, according to the colour of the ware.

4. *Taka-maki*.—This mixture, which is used for making raised lacquer, consists of *Rō* and *Nuritate* in equal parts. Half of the mixture is boiled, and camphor and powdered charcoal are stirred in according to the consistency required; then the other half is added, and the whole, after being well stirred together, is filtered through thin paper. This mode of dealing with the lacquer is only adopted during the summer, when lacquer is required to be dried quickly. The amount to be boiled differs according to the nature of the climate: for instance, in winter, only one-fourth is boiled. *Taka-maki* is always applied after a coating of *Sabiko* (described further on) has been given to the article.

5. *Se-shime nobe* is made by mixing camphor and *Se-shime* lacquer: after being well worked together the mixture is filtered through paper.

6. *Nobe* lacquer is made by mixing camphor with Yoshino lacquer and filtering the preparation through paper. There is also a mixture known as *Seshime-Yoshino* lacquer, which is, as the name implies, composed of *Seshime* and Yoshino lacquer mixed with camphor. If the lacquer is required to be hard, only a small quantity of camphor is mixed, but when desired soft, a larger quantity of camphor is added. It enables the workman to spread the lacquer with greater facility, especially for very fine strokes, but for the highest class of work hardly any is used.

7. *Sabi-ko*.—This mixture, used in making raised lacquer, is composed of finely powdered *to-no-ko*—burnt clay from the Inari Hill in Kiōto—mixed into a paste with water, to which an equal portion of *Seshime* lacquer is added, taking care to thoroughly mix the preparation.

V.—CULTIVATION OF THE LACQUER TREE, “RHUS VERNICIFERA.”

In ancient times no lacquer trees were specially planted: the lacquer was obtained from such as were found growing wild in the woods; but as the amount of lacquer ware used increased largely, enough lacquer could not be procured from the wild trees. Plantations were therefore commenced, and between the years A.D. 701-704, during the reign of the Emperor Mommu, a notification was issued to the effect that each farmer employing six hands and over should, during the ensuing five years, plant eighty lacquer trees on his grounds; those employing four hands, forty trees. Further, that the annual taxes should be paid in lacquer, making it evident that the lacquer trade was a very flourishing one at that time. After that plantations were made in every province and village; thus more or less was produced all over the country.

Lacquer trees can grow anywhere—on mountains, in woods, or plains—and the mode of cultivation is not difficult. They require no manure, but weeds and grass ought to be cleared away round the trees during four or five years after planting them. By the time they are ten years old weeds growing them cause no injury. [21]

A small quantity of sap is taken from the trees when they are about three years old, by making an incision in the bark. This also makes the trees grow better and faster. The best time for collecting the lacquer is during the rainy season in summer, but it may be continued to be drawn from the trees till September, and the sap is given three different names according to the season, viz., *Shin-mi*, *Niban*, and *Natsuko*.

The method of drawing the sap is as follows;—Five horizontal incisions are made in the bark about an inch apart, at the bottom of the tree on one side, with a small saw, and as the sap exudes from the gashes, it is removed from the first, or bottom, line with an iron hook, then from the second line, and so on until sap ceases to run from the wounds. What has been obtained is kept in a bamboo tube. The next set of lines are cut in the same way, on the other side of the tree, a little higher up, and so on every year. The trees are said to supply the best quality of lacquer when they are between fourteen and fifteen years old; when they are thirty or forty years old, if the trees do not continue to give a good yield, they are cut down close to the roots, so that young shoots may sprout again. When the tree is cut down, the lacquer is taken from the branches (as previously described), and is called *Ki-Seshime* lacquer. The district where the best quality of lacquer is produced in the country is *Aidzu*, in *Iwashiro*, particularly that known as *Suki* or transparent lacquer. Most of the trees are old, and the soil in that province seems to suit them better than any other. The *Aidzu* lacquer, however, is not suitable for the manufacture of black lacquer, and there are also some other kinds for which it cannot be used to advantage. The next best localities for lacquer are the provinces of *Kōdzuke* and *Shimotsuke*.

The best *Seshime* lacquer is produced in the district of *Tsukui*, in the province of *Sagami*. When this lacquer is used for the first or priming coat, it is more durable than any other kind, but only a small quantity is produced.

The sap obtained from the trees grown in the district of *Chichibu*, in the province of *Musashi*, is very good for black lacquer. A great [22] quantity is produced at *Yoshino*, in the province of *Yamato*, as well

as in the provinces of Kii and Owari, but the Tōkiō workmen do not use the lacquer from these three provinces for making the best ware, preferring that obtained from the Kwantō—i.e., those provinces lying east of Hakone.

The best quality of lacquer is of a light yellowish hue, and ought not be thick, but sufficiently gelatinous to make strings when lifted up. All lacquer turns black on exposure to the air.

VI.—VARIOUS WOODS USED.

The choice of the wood to be used naturally depends upon the description of article to be lacquered. For making book-shelves, cabinets and boxes of all kinds, the best woods for first class work are:—

Hinoki, *Chamaecyparis obtusa*, and

Kiri, *Paulownia imperialis*, that having the finest grain being selected.

Next in request are:—

Hō-no-ki, *Magnolia hypoleuca*, a fine light wood, of which all sword sheaths are made.

Tsuga, *Abies tsuga* (a kind of pine),

Himekomatsu, a species of pine. This wood is the best for carved figures of men, animals, etc. For goods of an inferior kind

Sugi, *Cryptomeria japonica*, is generally employed. For such articles as are turned in a lathe, as bowls, cups, small trays, etc., the best wood is

Keyaki, *Planera japonica*. That obtained from the province of Hiūga is accounted superior to the wood grown elsewhere.

Sakura, *Prunus pseudo-cerasus*, cherry, is also extensively used. The best comes from Chichibu, in the province of Musashi, and from Nikkō, province of Shimotsuke.

Inferior to the above, though largely used for the same purposes, are:—

Katsura, *Cercidiphyllum japonicum*.

Ichō, *Ginkgo biloba*.

Hego, *Cyathea arborea*, growing in large quantities in the neighbourhood of Hakone. It is principally used for toys.

[23] Besides these, many other woods are used; those that are hard and dark, with a handsome grain, often have merely ornamental devices in lacquer on the natural wood.

VII.—METHOD OF APPLYING LACQUER, FROM THE FIRST COAT TO THE FINISH.

1.—BLACK.

When the cabinet or other article on which the lacquer is to be applied has been made and the surface carefully smoothed, the wood is slightly cut away along each joining, so as to form an angular hollow: this is called with *Ko-kuso*,—hemp cut up small, mixed with glue and paste—and the whole surface is painted over with Seshime lacquer. This process is called *Ki-ji-gatame*, “hardening the wooden basis.” A coating of “wheat lacquer”—lacquer mixed with equal parts of wheaten flour—is then given to the article, and hempen cloth is stretched over it, great care being taken to lay it on smoothly and to leave no wrinkles or perceptible joinings. This hempen surface is then painted with a thin coat of Sabiko; a coating is then given of Ji-no-ko, a paste made of unglazed earthenware ground up, and water. Next a coating of Seshime lacquer, then another coating of Ji-no-ko, then another of Seshime lacquer. The article is then painted with Kiri-ko, a mixture of Seshime lacquer and Ji-no-ko. After that it is ground smooth with white whetstone and then given another coating of Sabiko: again ground with a whetstone, then rubbed over with Japanese ink applied with cotton wool. A coat of *Naka-nuri* then follows, and the whole surface is rubbed over with charcoal made of *Hō-noki*, giving it a dull but smooth surface. A coating of *Rō* is then applied, after which it is rubbed smooth with a piece of charcoal made of *Hiyakujikkō*, *Legerstrœmia* India; another coating of *Rō* is then rubbed on with the finger, and the article afterwards receives a preliminary polishing with finely powdered calcined deer’s horn and whetstone applied with a cotton cloth. A final coat of Seshime lacquer is given, it is then polished with the same kind of powder on the cotton cloth, the finishing

polish being given with the finger and the powder, and the very slightest quantity of oil, till it gradually assumes a most brilliant polish.

2.—RED.

The method of making red lacquer is the same as for black lacquer in the earlier stages, but subsequent to rubbing the article with Hō-no-ki charcoal, a coating of red lacquer (Seshime lacquer and vermilion mixed together) is applied, and the next process is to polish off with cotton cloth and the powder; the intervening processes from the rubbing with Hiyakujikkō charcoal being omitted.

The methods above described are for the manufacture of the best ware; for second-rate ware, "Mino paper"—a strong paper without any size,—is substituted for the linen cloth pasted over the wood; and again for the very common ware, neither cloth nor paper is used, and the wood is only smeared over with the persimmon fruit, then given a coat of Ji-no-ko, and after that ground smooth only once, before the final coat of lacquer of the colour needed finishes the work.

The above is a very simple mode. The workmen have several plans for saving themselves trouble and scamping the work, but as these are not recognized, they are not detailed in this paper.

It must be mentioned that after each application of lacquer, or a mixture thereof, to any article, it has to be put aside till it dries and hardens. To effect this, the article is placed in a press, the inside boards of which are quite rough and unplaced. The inside of this press is thoroughly wetted, and afterwards carefully closed to exclude the outer air. The article is kept in this press for about 24 hours, but this period is slightly lengthened or shortened according to the season of the year, the lacquer drying more quickly in summer than in winter. Lacquer will not dry or harden properly in the open air; it absolutely requires a damp closed atmosphere to do so, otherwise it would run and always remain sticky.

3.—HIRA-MAKIYE—FLAT GOLD LACQUER.

When it is desired to apply flat gold lacquer to an article that has received the plain coats, as related, the process is as follows:—

A thin species of paper, prepared with sizing made of glue and alum, is used. On this paper the design required to be transmitted to the lacquered article is drawn. On the reverse of this paper, the outline is lightly traced in lacquer—previously roasted over live charcoal to [25] prevent its drying—with a very fine brush made of rat's hair. This paper is then laid on the article to be lacquered and is rubbed with a spatula made of Hi-no-ki or whalebone, where the lacquer has been applied, and on removing the paper the design is observed lightly traced in lacquer.

To make it perfectly plain, this is rubbed over very lightly with a piece of cotton wool, charged with finely powdered whetstone, or tin; this brings the pattern out white. From one tracing, upwards of twenty impressions can be taken off, and when that is no longer possible, from the lacquer having become used up, it only requires a fresh tracing over the same paper to reproduce the design *ad infinitum*. This tracing does not dry, owing to the lacquer used for the purpose having been roasted, as previously mentioned, and can be wiped off at any time.

The pattern thus traced out is then filled in with groundwork lacquer, with a brush made of hare's hair, great care being taken not to touch or paint out the original tracing line. This is then powdered over with fine gold dust, silver dust, or tin dust, according to the quality of the ware. This dust is applied with a piece of cotton wool, charged with the material to be used, and the article is then gently dusted with a very soft brush made from the long winter coat of a white horse, to remove any loose metal dust that might adhere to the article, and to slightly smoothen the surface. If the article under manufacture is large, only a small portion is done at a time, and it is at once enclosed in an air-tight press, so as to prevent any dust or outside matter adhering to the freshly lacquered surface. At the proper time, when the lacquer has sufficiently hardened, the article is taken out, and the part over which the gold dust has been sprinkled, receives a coat of transparent varnish (*Suki urushi*), laid on with a hare's hair brush, and a further portion is prepared with a coating of gold dust, as on the previous day: the article is again closed up in the air-tight damp press as before, till

dry. When the portion which has received the second coat of lacquer over the gold dust is quite hard, it is rubbed smooth with a piece of hard charcoal made from camellia wood, or Hō-no-ki, until the whole is level with the surrounding parts. Then it is rubbed with the finger and some finely powdered whetstone and deer's horn, with the smallest quantity of oil, till it attains a fine polish. If upon this surface any further work takes place, such as the veining of leaves, or the painting of stamens, etc., of flowers, these are traced in lacquer and covered with gold dust, and when dry the final polish is given with the finger and powdered deer's horn. The above is the usual mode of making flat gold lacquer. [26]

4.—TOGI-DASHI—BRINGING OUT BY POLISHING.

This style consists in applying to the plain lacquered article the design required, in the same manner as in *Hira-makiye*. The whole surface of the article then receives a coat either of black lacquer or transparent lacquer, which, when dry, is ground down with Hō-no-ki charcoal till the pattern shows out. It is then polished off in the same manner with deer's horn and oil, on the point of the finger. For making *Togi-dashi*, gold dust of a slightly coarser quality is used than for ordinary *Hira-makiye*.

5.—TAKA-MAKIYE—RAISED GOLD LACQUER.

The first and second processes are the same as when making flat lacquer, but instead of gold dust, finely powdered camellia charcoal is shaken over the freshly lacquered surface. After drying, the article is carefully dusted with a soft rag, to remove any loose charcoal powder, and the parts are further washed with a brush and water, to bring out the fine lines, etc. Some Yoshino lacquer is then rubbed on the charcoal surface with a piece of cotton wool, a coating of *Sabiko* applied, and the article set to dry in the damp press. Afterwards the surface is ground smooth with Hō-no-ki charcoal, and a further rubbing is given with camellia charcoal powdered, on a piece of cotton cloth. A coating of *Taka-maki* lacquer is then given, and the article is put again in the press to dry: on removing it the process of grinding with Hō-no-ki and powdered camellia

charcoal is repeated. Yoshino lacquer is then rubbed on with a piece of cotton wool as before, and the article is again set to dry. When taken out it is polished smooth with powdered whetstone on the point of the finger, a coat of *Shita-maki*, or groundwork lacquer, given, and then the gold powder is applied,—for small work, with a fine brush, and for large work, shaken through a quill with muslin over one end. The article is then again set to dry, and the remainder of the process is the same as for flat lacquer.

- [27] According as the lacquer is to be more or less raised, two or more coats of *Taka-maki* lacquer have to be given, till the required height is obtained, and it is at this period of the process that the shape of the hills, rocks, trees, or flowers is worked out.

VIII.—VARIOUS KINDS OF POWDERED METAL USED IN ORNAMENTS LACQUER.

1. *Keshi-ko*, gold or silver leaf reduced to powder by mixing with glue. When the leaf has been reduced sufficiently fine, water is stirred in to get rid of the glue, the metal sinking to the bottom. After drying, the powder is ready for use.
2. *Goku Mi-jin Ko*.
3. *Ara-goku*.
4. *Mi-jin*.
5. *Hana-ko*.
6. *Mi-jin Tsune*.
7. *Hoso-me Tsune*.
8. *Naka Tsune*.
9. *Nashiji* and *Hira-me* are likewise gold and silver filings. After filing, the dust is sifted, the finest being called *Nashiji*, and the dust which has not passed through the sieve is then put on an iron plate and covered with a thin sheet of the same metal. This is then rubbed with a heavy metal bar, so as to flatten the dust as much as possible, which is then called *Hira-me*.

These are all names given to gold and silver filings of various degrees of fineness, *Goku Mi-jin Ko* being the finest, and *Naka Tsune* the coarsest.

The gold used is of various qualities.

1. *Yaki kin*..... Pure gold.
2. *Ko-ban* gold 7.4, silver 2.6.

3. *Jiki-ban* gold 4.4, silver 5.6.

4. *Tsugi-ban* gold 2.2, silver 7.8.

There are also many qualities of powdered tin.

IX.—INSTRUMENTS, ETC., USED IN THE MANUFACTURE OF LACQUER WARE.

1. Spatula made of *Hi-no-ki*; used for mixing *Sabiko* or other compounds: corresponds to an artist's palette knife.
2. Spatula made of whalebone; is the best for laying on the first [28] coat of lacquer; it is also used for mixing. The material is called Island whalebone and is obtained from China, as Japanese whalebone, owing to its liability to split, is practically useless.
3. Bamboo tubes or funnels, of three different sizes, with wire netting at one end according to the fineness required; used in making *Nashiji*.
4. A goose quill, with a fine piece of muslin fastened over one end for scattering the very finest gold and silver powder.
5. Charcoal, made from *Camellia*, *Azalea*, *Hō-no-ki* and *Hiyakujikkō* woods.
6. *To-no-ko*, the clay from the *Inari Hill* at *Kiōto*, burnt and ground to a fine powder.
7. *Hiki-ko*, the fine powder obtained by scraping a whetstone with a knife.
8. Rape seed oil, and *Ye* (*Perilla*) oil.
9. Hair brushes of different sizes made from the long hairs of the winter coat of a horse, used for dusting and wiping the work.
10. Brushes used for painting with lacquer:—
 - (a) Rat's hair brushes, made of the longest hairs in the body, for fine work.
 - (b) Rat's hair brushes made of ordinary hair, used for common brushes.
 - (c) Brushes made from hare's and cat's hair. Various sized brushes are used, and are known in the trade as *ichū*, *ichū-han*, *nichū*, *san-chō*, etc. They are used for groundwork.

- (d) Brushes of different sizes of human hair, used for wiping off any extra loose gold or silver dust, after application.

X.—NOTED WORKERS IN LACQUER, AND THE PERIOD IN WHICH THEY LIVED.

- Norisuye, period of Angen, A.D. 1175.
 Sadayasu, period of Angen, A.D. 1175.
 [29] Ki no Sukemasa, period of Jūyēi, A.D. 1182.
 Nakahara Suyetsune, period of Jūyēi, A.D. 1182.
 Kiyowara Sadamitsu, period of Jūyēi, A.D. 1182.
 Butsujō, period of Shōwa, A.D. 1312.
 Suketoki, period of Shōwa, A.D. 1312.
 Riyōyēn, period of Shōwa, A.D. 1312.
 Kō-a, period of Shōwa, A.D. 1312.
 Rengetsu, period of Shōwa, A.D. 1312.
 Zempō, period of Shōwa, A.D. 1312.
 Shinshō, period of Shōwa, A.D. 1312.
 Genshō, period of Shōwa, A.D. 1312.
 Sanetoki, period of Shōwa, A.D. 1312.
 Igarashi, period of Hōkoku, A.D. 1449.
 Igarashi Dōko, period of Tenshō, A.D. 1573.
 Hon-nami Kōyetsu (resident of Yedo), period of Kwanyei, A.D. 1624.
 Koma Kiuhaku (resident of Yedo), period of Kwanyei, A.D. 1624.
 Ogata Kōrin (resident of Kiōto), period of Hōyēi, A.D. 1704.
 Nonaka Kenzan (resident of Kiōto), period of Hōyēi, A.D. 1704.
 Shiomi Kōhei (resident of Kiōto), period of Hōhei, A.D. 1704.
 Kajikawa Kinjirō (resident of Yedo), period of Temmei, A.D. 1781.
 Yamamoto Shuushō (resident of Kiōto), period of Temmei, A.D. 1781.
 Nagata Yūji (a pupil of Ogata Kōrin), period of Temmei, A.D. 1781.
 Koma Kwan-sai (resident of Yedo), period of Kwan-sai, A.D. 1789.
 Inouye Haku-sai (resident of Yedo), period of Kwan-sai, A.D. 1789.
 Hara Yōyū-sai (resident of Yedo), period of Kwan-sai, A.D. 1789.

Shibata Ze-shin,
 Watanabe Tōsen,
 Ikeda Tai-shin,
 Nakayama Ko-min,
 Ogawa Shō-min.

} Tōkiō workmen of the present
 day. They are all elderly men.

Ogawa Shō-min is noted for his clever imitations of old ware.

Watanabe Tō-sen is at present employed by a company in Tōkiō called the Sei-kō-sha, and is at work on a tobacco box for the Empress. The pattern is landscape and water, with cranes in the foreground, and embraces the various styles, viz., *Togi-dashi Hira-makiye* and *Taka-makiye*. [30] It has been six months on hand and will probably be completed in a couple of months. The estimated cost is about three hundred yen. The above facts will give a slight idea of the time it takes to complete a good piece of lacquer ware; the dimensions of this box are about ten inches long by six deep and eight inches high.

The great drawback to making lacquer ware of a high order in the present day consists in the fact that the workmen cannot afford the time necessary, but are obliged to work as rapidly as possible. In former days time was no object.

XI.—NOTED PIECES OF OLD LACQUER.

A *Kesa bako*, box for holding the scarf worn by Buddhist priests over the shoulder, formerly belonging to Shōtoku Taishi, who lived during the reign of the Emperor Kinmei, A.D. 540-572. This is preserved in the temple of Tōdaiji at Nara.

A *Sword sheath*, formerly belonging to the Emperor Shōmu, A.D. 724-748, also preserved at the temple of Tōdaiji at Nara.

A *Writing box*, formerly belonging to the Emperor Go-Toba, A.D. 1186-1198. This is preserved in the Shintō temple of Hachiman at Kamakura.

A *Mirror stand*, formerly belonging to Masago, wife of the Shō-gun Yoritomo, A.D. 1192-1199. Preserved in the temple of Gon-gen, in the province of Idzu.

A *Tebako*, box formerly belonging to the Shō-gun Ashikaga Yoshimasa, A.D. 1449-1490, preserved in the museum at Ueno.

[31] NOTES ON THE DIALECT SPOKEN IN AHIDZU.

BY BASIL HALL CHAMBERLAIN.

[Read November 9, 1880.] :

During a journey last year in the north-western portion of Ahidzu, bordering on the province of Wechigo, I observed some peculiarities in the speech of the peasantry which may interest those who occupy themselves with linguistic matters. The dialect is allied to that spoken round Yonezawa,* but marked by some characteristic differences. The following are the most salient points :

Ai is always contracted to *ê* ; thus *taita*† (from *taku*, "to kindle," "to boil,") becomes *têta*, *moraimas* becomes *morêmas*, etc.

Hi in some localities sounds like *fi*, the *f* being not our English labiodental *f*, but the true labial as sounded in the Japanese syllable *fu*. Thus at the hamlet of Kanafutsu, the name of the village of Yoshi-ga-hira on the other side of the Hachi-zhifu-ri Pass, was pronounced Yoshi-ga-fira.

In general the pronunciation may be said to be indistinct and slightly lisping, but to have none of that tendency to an undue use of the *nigori* and to nasalization (except in the word *ambu*, for *abu*, "gadfly,") which marks other northern varieties of Japanese.

* See Mr. Dallas's paper on "The Yonezawa Dialect," in Vol. III. Part 2 of these Transactions.

† In representing colloquial and dialectic words and forms, I have spelt by ear, phonetic spelling being in their case as scientific and necessary as is historic spelling when dealing with the standard written tongue.

Passing from pronunciation to grammar, we find the chief characteristic of the dialect to consist in the retention of the use of honorific verbal forms which belonged to the general colloquial language in mediæval times, but which have left in the modern speech of Yedo but two or three isolated representatives. Thus we have *sagarassharu*, "to walk down"; *norassharu*, "to ride"; *tomorassharu*, "to stop"; *tōrassharu*, "to pass through." These old forms are perpetually in the mouths of the peasantry, who have not learnt to make use of the compound honorifics *o nori nasaru*, *o tomari nasaru*, etc. In the second conjugation, old forms in *sasu* survive, thus: *mite isasu* (=Yedo, *go ran nasaru*), "to see"; *kisasu* (=Yedo, *o ide nasaru*), "to come." The use of these ancient honorifics gives a very quaint sound to conversation.

Another curious verbal form is *yas*, "to be," doubtless for *gas* (from *gozarimasu*). The negative *gozaranu* is likewise retained in preference to the doubly honorific form *gozaimasen*.

Of Pronouns, *ore* for the First Person is most used in speaking to equals, and *washi* (Plural *washi-ra*) to superiors. The almost universal form for the Second Person is *omō* (for *omai*, from *o mahe*), with a Plural *omō-gatu*. Even in addressing superiors, no more polite word seems to be known.

The vocabulary differs so little from that in use at the capital that a person well acquainted with the Yedo dialect will, as a rule, have no difficulty in understanding what is said around him. In words, as in grammatical forms, what will strike him most is the retention of what, in the standard colloquial, has long been antiquated, for instance :

ishō, for *kinono*, "clothes."

kakitsubata, for *hana-shōbu*, "the iris."

sakadzuki, for *choko*, "a sake-cup."

The above remarks are offered to the Society less for their own sake than for the purpose of showing how extremely little can be done in this field by a mere passing traveller, even if he use the best endeavours to draw the country folk into conversation; for I am persuaded that much deserving of attention escaped me. Where, again, as in the provinces of Uzeñ and Rikuzeñ, the speech of the

- [33] common people is as different from that of Yedo as is the Yorkshire dialect from standard English, nothing short of a lengthened sojourn could entitle one to give a satisfactory account of it. The proper persons for working in this field are, not tourists, but residents, of whom, as school-masters, missionaries and others there must be not a few scattered over the outlying districts of Japan. May not some of them be induced to undertake the task,—to sketch out for us at least the main features, and, if possible, to furnish us with complete vocabularies of the chief rustic dialects, taking as their standard the colloquial language of Yedo as set forth in Mr. Aston's Grammar of Spoken Japanese and Mr. Satow's or Dr. Hepburn's Dictionary, and noting the various differences in inflection, pronunciation and vocabulary? On the importance of the study of dialects it is needless to enlarge in the presence of any one at all acquainted with linguistic research; and Japanese is an idiom deriving so little side-light from any sister-tongue, that the various sections into which it is divided in its ancient and modern forms must be investigated with the utmost minuteness if Japanese philology is to stand on anything like a satisfactory basis.

DISCUSSION.

After a few remarks by the President, who regretted the absence of the author, and by Mr. S. Tsuda,

Mr. Satow said: There are four points to which the student of a particular dialect ought to direct his attention; 1st, to the collection of words and forms different from those of the standard speech; 2ndly, he should endeavour to distinguish those which are peculiar to the particular dialect from those which are found in other rural dialects; 3rdly, he should mark those which are archaic words preserved, and 4thly, note those which are merely corruptions of the standard speech.

- [34] Of all the dialects, that of Satsuma probably differs most widely from the standard. Two natives of the province conversing in it would be quite incom-

prehensible to a person acquainted solely with the Yedo dialect. A few years ago, while hurriedly crossing the province, I obtained the following specimens:—

SATSUMA DIALECT.

Satsuma.	Yedo.	
<i>Gattsuri</i>	<i>kitchiri</i>	exactly.
<i>Mambô</i>	<i>riohô</i>	both sides
<i>Deshika</i>	<i>doridake</i>	how much.
<i>Koshiko</i>	<i>koredake</i>	so much.
<i>Tonojô</i>	<i>teishi</i>	husband.
<i>Okata</i>	<i>niobô</i>	wife
<i>Kambô sambô</i>	<i>yohô or zhihō</i>	all sides.
<i>Chinka</i>	<i>chiisai</i>	little.
<i>Futoka</i>	<i>ôkii</i>	big.
<i>Yaswaruki</i>	<i>yaswarakai</i>	soft.
<i>Hayatsuki</i>	<i>kan-dokuri</i>	warm sake bottle.
<i>Chuka</i>	<i>dobin</i>	teapot.
<i>Teshiwo</i>	<i>kozara</i>	plate.
<i>Bontan</i>	<i>jôben</i>	pumelo.
<i>Motoru</i>	<i>kaeru</i>	return.
<i>Nukui</i>	<i>atatakai</i>	warm.
<i>Nukumeru</i>	<i>atatameru</i>	to warm.
<i>Ayumu</i>	<i>aruku</i>	to walk.
<i>Bu</i>	<i>ninsoku</i>	coolie.
<i>Kashira</i>	<i>saisho</i>	at first.
<i>Maikaru</i>	<i>yuku</i>	to go.

Verbs of the 2nd conjugation are conjugated like verbs of the 1st, except in the participle, e.g., *miranu* for *miru*, *miyô* for *miyu*.

The Kiôto dialect, as far as pronunciation is concerned, differs from that of Tôkiô (the Yedo dialect) very slightly. In the introduction to Dr. Hepburn's larger Japanese-English Dictionary, it is stated that at Kiôto *g* has the hard sound of *g* in *get*, *gain*, and that *se* and *ze* are pronounced *she* and *je*. I have been several times in Kiôto for several days together, in constant conversation with the inhabitants, but have failed to detect these peculiarities. It is also usually supposed that the Kiôto people pronounce *yw* instead of *e* when that syllable occurs at the beginning of a word, but though I have listened very carefully for this *y* I have never heard it, except when pronounced rapidly after a word immediately preceding, when the passage from the final nasal *n* or a vowel naturally gives rise to the semi-vowel *y*, as is the case in the Yedo dialect also. It is this fact which has led foreigners to call the Japanese dollar *yen* instead of *en*, because they always [35] hear it immediately after a numeral ending in a vowel. At the beginning of a sentence no *y* is heard either in the Kiôto or in the Yedo dialect.

The Kiôto dialect is certainly more correct in pronouncing certain Chinese syllables *kwan*, *kwatsu*, *kwai*, *gwan*, *gwatsu*, *gwai*, etc., instead of *kan*, *katsu*, *kai*, *gan*, *gatsu*, *gai*, etc., like the inhabitants of Tôkiô. It is a curious fact that in the province of Kadzusa, on the eastern side of Yedo Bay, therefore further from the ancient capital, the correct pronunciation is preserved. Still the Kiôto people use several corrupt grammatical forms and corrupted expressions of which the Yedo dialect is not guilty, and I think it is going somewhat too far to say that the language of Kiôto is the standard. For instance they say *sen' naran'*, must do, for *seneba naran'*: *kôte*, *kôta*, buying, bought, for *katto*, *kaita*, which latter forms are certainly nearer to the classical *kohite*, *kahita*. They have corrupted *dono yônu* and *dono yôni* into *donaina*, *donaini*, and *da* is changed into *ja*. They have a great tendency to drop final *u*, as in *go mei ase* for *go men asobase*.

Another characteristic of the Kiôto dialect is the use of honorific verbs in *ssharu*, as *omowassharu* from *omou*, to think, *misassharu* from *miru*, to see, *sassharu* from *suru*, to do. *Inassharu*, *arassharu* and *ossharu* are the only such forms known to the Yedo dialect.

<i>Nukui</i>	warm.
<i>Nukumeru</i>	to warm.
<i>Imuru</i>	to go.
<i>Modoru</i>	to return.
<i>Otoru</i>	to be inferior.
<i>Nzêi</i>	vicinity, side.
<i>Nurui</i>	weak (of tobacco.)
<i>Yotari</i>	the evening.
<i>Na-meshi</i>	I say!
<i>Sakai</i>	because.
<i>Kuchinawa</i>	snake.
<i>O iken' ka</i>	for <i>kanai ka</i> .
<i>Gozaru</i>	to come, to go.
<i>Mazôna</i>	by no means!

These are of course only a few of the expressions found in the Kiôto dialect and absent from that of Yedo, and it is also probable that none of them are peculiar to the ancient capital.

ON "KAKI-NO-SHIBU."

[36]

BY I. ISHIKAWA, GRADUATE OF THE UNIVERSITY OF TŌKIŌ.

[Read November 9, 1880.]

Kaki-no-shibu is the juice of certain varieties of persimmon, the fruit of the *Diospyros kaki*. The edible persimmon, when quite ripe, is very sweet to the taste, but when unripe is very astringent; other varieties, even in the mature condition, do not lose their astringency. By drying in the sun, the skin being first removed, even these varieties become quite sweet, the tannin apparently disappearing completely. The *Kaki-no-shibu* is always prepared from the latter variety; the fruit is gathered early in the summer and is beaten in stone mortars. It is next transferred to wooden tubs, in which the pulp is covered with water and allowed to stand for half a day. After this it is filtered through a straw bag, and the milky juice thus obtained is known as the best *shibu*. The residue in the bag is treated once more in the same way.

The juice is milky at first, but it soon grows darker when exposed to air and light, and a thin film forms on the exposed surface. As sold, it is a light or dark-grey liquid, holding minute particles of solid matter in suspension. It is strongly acid to litmus paper, and it gives a copious white precipitate with gelatin. It possesses a very unpleasant smell.

The applications of this liquid are numerous; whenever a substance is to be rendered unchangeable in the air it is washed over with the juice, and then becomes permanent and much stronger. It is especially used for giving strength and durability to paper, which in Japan is applied to many uses.

[37] The first question which may be asked is how the juice causes the material covered with it to become stronger and more durable. In one specimen of the juice which I examined, the total weight of solid matter was 64.6 grams per litre, of which more than one-half was tannin. The antiseptic properties of tannin are well known, but it does not seem that the presence of the tannin is sufficient to account for the great change in the character of the paper which actually takes place. Besides, paper painted with other tannin solutions does not present the same properties. Nor does the effect appear to be due to the presence of albumenoid substances, which by slowly combining with the tannin in the pores of the paper would form a kind of leather. The juice contains nitrogen equal to 0.18 % of the total solid matter, which would correspond to 1.1 % of albumenoids, but this supposition seems improbable.

During the course of the experiments on this substance, the following facts were observed, and they suggest the explanation which follows them.

1. The blackening of the milky juice is only effected in an open vessel, its colour remaining unchanged when left in closed vessels. In this respect it resembles lacquer (v. Ishimatsu, Chem. News, March 14, 1879, p. 113).

2. By exposure to the air in a flat vessel the colour becomes darker and a membranous film forms over its surface. The film is almost insoluble in water and alcohol, and it is not perceptibly attacked by boiling with dilute sulphuric acid.

3. When left in closed bottles with only a small space above it a thin film is formed, but when this has been made to sink by shaking, no further formation of film takes place.

4. When the film formed in an open vessel has been removed, a fresh one forms, but the production of new films becomes slower and slower.

5. Of the suspended matter the coarse particles settle to the bottom, but the finer ones remain suspended in the form of an emulsion. It is not cellulose, for it is insoluble in an ammoniacal solution of cupric oxide. It is but slightly soluble in alcohol, 3.4 % of the dried residue being dissolved by alcohol of 97 % strength. It has a greyish colour,

but when dried becomes black and forms a hard mass. It is in fact a gum-resin. In addition to the above mentioned facts the dealer stated that the juice loses its peculiar properties when exposed to the air for a few months.

[38]

Taking the above facts into consideration, it is probable that the following is the explanation of the action of this liquid upon paper and such bodies:—

(a) The strength gained by the paper is due to the formation on its surface of the film above described.

(b) The formation of this film is due to the presence of small particles of gum-resin held in suspension which, on oxidation, becomes solid and darker in colour, like lacquer. Hence the dark colour which paper so treated always possesses.

(c) The tannin present acts as an antiseptic.

The peculiar smell of the juice appears to be due to the presence of butyric acid. About half a litre of the liquid was distilled, 200 c.c. being collected. The distillate had a slight acid reaction, and a strong, unpleasant odour. On the addition of calcic carbonate, effervescence took place, the liquid was filtered and evaporated, first over the water bath then in vacuo over oil of vitriol. A thin film formed on the surface, which increased till the liquid was covered. The vessel was then removed and heated, by which a fresh amount of solid matter appeared, as would happen if the solution contained calcic butyrate. The liquid was dried up at 70° C. and weighed, then heated to 140° C. by which it lost 8 % of its original weight at 70° C. 0.519 gram of the dried powder after ignition left 0.1425 gram of lime, which amounts to 19.61 per cent of calcium.

Obtained. Calculated, $\text{Ca} (\text{C}^4\text{H}_7\text{O}_2)_2$ $\text{Ca} (\text{C}^4\text{H}_7\text{O}_2)_2 + \text{H}_2\text{O}$		
Ca	19.61 %	18.69 %
H ₂ O	8.0 %	7.76 %

It appears, therefore, that the volatile acid is principally butyric acid.

Mr. S. Tsuda, speaking in Japanese, which was translated by the corresponding secretary, said that at Tanamura in Ōshiu, a place well known for the number of poisonous snakes which infest it, the peasants take with them to the fields a supply of *kaki-no-shibu* in bamboo tubes, and apply it to the wound when they receive a snake-bite, to prevent the poison from taking effect. With regard to the conversion of the tannin of the astringent *kaki* into sugar, he mentioned that the Japanese sometimes beat up one very astringent variety of the fruit into pulp, and add finely powdered barley which has previously been roasted. The mixture after standing for three hours becomes sweet and very agreeable to the palate, and is used in some localities as a substitute for sugar. The dried skin of the astringent *kaki* is also used instead of fish to flavour soup. The best quality of *shibu* is made from a sort of *kaki* no bigger than a grape, which is so astringent that it does not turn sweet, however long it is kept. It sweetens, however, if subject to frost before it is plucked from the tree. The black *kaki* wood so much esteemed for the manufacture of boxes and other small articles, is chiefly but not altogether derived from the astringent or *shibu-kaki* tree. The colour of the wood is very uncertain, and the only sure way to tell before the tree is felled whether its timber is black or not is to drill a hole in the trunk. Two trees growing together and apparently quite alike may turn out to be one of them white and the other black.

Mr. Ewing asked whether the black paint used for fences, etc., composed of *shibu* and lampblack, had an effect in preserving the timber to which it was applied at all comparable to the effects of foreign methods of preservation.

Mr. Atkinson replied that it had some preservative effect, but not much. He added that *kaki* juice after it has become sweet acidifies on exposure to the air, the change being apparently effected by the presence of a small organism of the shape of a lemon, which is also observed in Europe to be present during grape fermentation.

NOTES ON SOME RECENT EARTHQUAKES.

[40]

 BY J. A. EWING, B. Sc., F. R. S. E.

[Read December 14, 1880.]

The earthquakes which are the subject of the following notes took place during the month of November, 1880, and were of the usual slight kind familiar to residents in Tōkiyō. Whatever interest they may have is due to the fact that they formed the first tests to which a new seismo-graph of the writer's design was exposed, and that, by its means a complete record of the horizontal movement of the earth's surface was obtained from the beginning to the end of each shock.

The new seismograph, a fuller account of which will soon be published elsewhere, consists of two horizontal levers pivoted on vertical axes which are rigidly fixed to posts stuck in the earth. At the short end of each lever there is a heavy bob of metal, whose inertia keeps it at rest during the earthquake. The long end of each presses very lightly upon a smoked-glass plate, which is kept revolving continuously by clock-work. The construction of the levers is such that the axis on which each of them is pivoted is the centre of percussion relatively to the centre of the bob, which is the corresponding centre of oscillation. The effect is, that when any small horizontal movement of the earth's surface takes place at right angles to either lever, the bob of that lever remains stationary while the axis moves, and consequently the long end moves on the revolving plate through a distance which is a certain multiple of the earth's motion. The two levers are placed at right angles to each other, so as

to record two rectangular components of a displacement in any horizontal direction. In the instrument now in use, the ratio which the recorded motion bears to the actual motion is six to one. During an earthquake the motions of the levers, together with that of the plate, inscribe on the latter a pair of undulating lines which show the amplitudes, periods, and character of the successive waves of earth motion.

The instrument stands in one of the rooms of the engineering laboratory in Tōkiyō University. Beside it is another seismograph, a description of which will be found in the volume of the Transactions of the Seismological Society of Japan. This consists of a long pendulum with a massive bob, against which press the short ends of two levers, whose long ends touch smoked-glass plates in a manner similar to that described above. As the bob of the pendulum will either remain steady or move in a determinate manner during an earthquake, the recorded motions of the levers show on a magnified scale the successive displacements of the surface of the earth. The pendulum is 20 feet long, and hangs from a rigid frame which has no connection with the roof of the building in which it stands,—conditions which are designed to make it probable that the pendulum will not be set swinging by a shock.

Of the earthquakes now to be described the first was recorded both by the horizontal lever seismograph and by the long pendulum seismograph. Afterwards the latter instrument was taken down to have alterations made in it, and the other earthquakes were recorded by the horizontal lever seismograph only. One lever in the last named instrument registered east and west motion, the other north and south motion, approximately. The following are the earthquakes already recorded, with the dates of their occurrence :—

I.—NOV. 3RD, 5H. 45M. A. M.

RECORD GIVEN BY THE HORIZONTAL LEVER SEISMOGRAPH.

The glass plate of this instrument was revolving at the rate of one turn in thirty seconds, and the record extended over three complete revolutions. In other words, the earthquake lasted continuously during one and a half minutes of time. During this time no fewer than 150

complete (double) oscillations of the earth's surface took place. The mean period of a complete oscillation was, as nearly as possible, three-fifths of a second. The motion was almost wholly N. and S.; the other lever showed a very small but still perceptible amount of disturbance. The records given by both levers began simultaneously, as well as can be judged, but the E. and W. movement soon disappeared, while the N. and S. movement lasted, as has been said, for $1\frac{1}{2}$ minutes and consisted of more than 150 complete waves. [42]

The earthquake did not begin suddenly. The waves began to appear so gradually that it was impossible to say to which side the first deviation took place. The amplitude increased, however, pretty rapidly, and reached a maximum after about three complete waves. It was then $1\frac{1}{2}$ millimeters. This is the recorded total amplitude (or movement from one side to the other side), and is six times the actual amplitude of the earth displacement. The latter was therefore 0.29mm. This extent of movement was perhaps equalled but certainly not exceeded during the remainder of the disturbance.

This motion took place in the direction of N. and S. The waves recorded by the other lever were too small to be easily measurable, and their amplitude never exceeded 0.3mm. This gives a greatest earth movement in the direction E. and W. equal to 0.05mm.

Combining the two displacements and taking the direction of the levers more exactly than they have been stated above, we find for the actual greatest displacement of a point on the earth's surface during the disturbance the direction N. 15° W. and E. 15° S. and the total amplitude 0.3 millimeter.

Owing to the very imperfect construction of the clock and its connection with the plate, the motion of the plate was very far from uniform during even a single revolution and when this record was obtained no appliance was in use for the purpose of marking time on the plate during the shock. It is therefore impossible to draw any conclusion from the record as to the relative length of the periods of the successive earth waves, except this, that they were certainly not equal. Both in amplitude and in period the successive waves were far from regular; the disturbance did not consist of a series of similar simple harmonic displacements.

After about the third wave from the beginning of the disturbance, the amplitude of displacement ceased to increase. It then fluctuated [43] considerably—sometimes becoming quite small and then increasing again to a value approaching its first maximum. Before the earthquake ceased there were several maximums and minimums in the amount of displacement, but never a complete cessation of displacement until the whole disturbance was over.

RECORD GIVEN BY THE LONG PENDULUM SEISMOGRAPH.

The record of the long pendulum seismograph shows that the pendulum was set swinging by the shock, through a total amplitude of about 1mm. of actual motion. (This wave was recognised as due to the swing of the pendulum by its length, which agreed with the pendulum's free period.) Considering the very large number of successive movements of the earth's surface during the disturbance, this result will scarcely cause surprise, except perhaps at the fact that the arc of oscillation was not much greater than it was. As the swinging of the pendulum continued with gradually diminishing amplitude during many revolutions of the plates, the records were much obscured and it was quite impossible to trace the beginning of the earthquake. It was, however, easy to see the comparatively rapid undulations of the earthquake superposed upon the long wave due to the swing of the pendulum. The pointer which registered north and south motion showed these very clearly. Their greatest total amplitude on the record was 2mm., corresponding to an actual total displacement of $\frac{2}{7}$ mm., since the multiplying ratio was 7 to 1 in this case. The other pointer showed scarcely any true earthquake motion: it was just visible and no more. These results agree very closely with those obtained by the other instrument. It is interesting to notice that although there was hardly any true earth motion in the E. and W. direction, the pendulum swung quite as much in that direction as in the other.

The results show how little reliance can be placed on the indications of pendulums when no provision is made for recording their indications in conjunction with the time. In this case the swing of the pendulum, although more than three times as great as the true earth motion, was absolutely so small that it might very readily have been confused with

the latter, had the revolution of the plates not given a means of distinguishing them.

If we assume that a displacement of the earth's surfaces takes place [44] approximately according to the simple harmonic law, then taking the periodic time as 0.6sec. and the total amplitude as 0.3mm., we have for the greatest velocity of displacement 1.57mm. per second, and for the greatest rate of acceleration 16.4mm. per second per second. The value of g in the same units is 9797. Bodies connected to the surface of the earth sufficiently rigidly to move with it must therefore have experienced a maximum horizontal force equal to about one-sixtieth of their own weight. An old form of seismoscope consists of circular cylinders of homogeneous material and of various lengths, standing on a plane rough horizontal surface, their ends being planes exactly normal to their axes. In order that a cylinder of this kind should have been overthrown by a single wave* of the earthquake of Nov. 3rd, its length must have been not less than sixty times its diameter.

II.—Nov. 10TH, 11. 9M. A. M.

This shock produced the impression of much greater violence than that of Nov. 3rd. Its record is different in many ways from the one just described.

Both pointers moved considerably. The pointer registering E. and W. motion described three long waves of nearly 1 second period and 2mm. total amplitude (that is on the record: the actual motion is one-sixth of this). But upon these long waves there were superposed much shorter ones, whose period was only about one-fifth of a second; their amplitude was about one-third of a millimeter. After the three long waves the record showed nothing but a continuous and very irregular ripple of short waves, of very variable amplitude, the maximum being about 1mm. This occurred nearly ten seconds after the beginning of the shock.

*This restriction is necessary, for a number of successive waves, applying opposite forces with rapid alternation, might only make the cylinder rock instead of overthrowing it. This is probably the reason why the cylinder seismoscope has been found not to answer well in practice.

[45] The other pointer, showing N. and S. motion, gave an irregular ripple of short waves merely. From their changing form they were clearly the resultant of two or more inharmonic constituents. Their period was also about one-fifth of a second, and their greatest amplitude a little over 1mm. The visible disturbance extended over a distance equivalent to about half a minute of time.

Comparing this with the shock of Nov. 3rd, we see that the difference in "intensity" was due not so much to a difference in the extent of the earth movement as to greater frequency of the waves in this instance. The kinetic effect of a wave varies as its amplitude and as the square of its frequency. The frequency of the waves was here about three times as great as in the former case, but their amplitude was less in the ratio of about two to three. From this we should expect to find the "intensity" of the shock of Nov. 10th about six times as great as that of Nov. 3rd. It need scarcely be pointed out that the data involved in this estimate are known only very roughly, and the result must be accepted with caution. It is, however, interesting to find that according to the observations taken in the observatory at Yamato Yashiki, the "intensities" of the two shocks did differ in just this ratio of six to one.

III.—Nov. 12TH, 5H. 36M. P. M.

In this case the motion was chiefly but not wholly north and south. There was first a very slight ripple of small waves for two or three seconds; then came a number of large waves of various periods and amplitudes. Their magnitude rose and fell several times during the disturbance, which continued for about 40 seconds. In this, even more than in the former case, there is an evident mixture of inharmonic waves, giving rise to the exceedingly irregular curve traced on the plate. The greatest amplitude in the record was 1.2mm., corresponding to a total earth movement of 0.2mm. The earthquake died out slowly in a long sequence of small and fairly regular waves.

IV.—Nov. 27TH, 3H. 1M. P. M.

This was a very slight shock. The record showed N. and S. movement, but none in the direction of E. and W. The circular line,

however, traced by the pointer which registers E. and W. motion had become somewhat broad, so that a very small motion might have taken [46] place without leaving any trace. The N. and S. motion began with a series of four distinct and fairly regular waves; the period of each was as nearly as possible half a second, and their total amplitude 1mm. on the record, corresponding to an earth motion of 0.17mm. nearly. Then followed an interval of scarcely visible waves lasting for about 5 seconds; then the amplitude again increased to 1mm. Two or three more waves of this amplitude were registered, after which the motion again became so faint as to be almost invisible. Slightly greater motion could again be traced at a point corresponding to an interval of about 20 seconds from the beginning of the shock. This continued for a few seconds, and then the record died away completely.

V.—Nov. 30TH, 1H. 6M. A. M.

Here again the motion was almost wholly N. and S. It began very gradually: the first waves were of almost inappreciable size. Then came a group of very irregular undulations, unequal both in period and in amplitude, the maximum amplitude being about 1mm. on the record, which corresponds to 0.17mm. of actual motion. Lastly, the disturbance died away slowly in a long ripple of very small waves. The periods of the earlier large waves were greater than those of the subsequent small waves; they varied from about one-half to one-quarter second. Altogether at least 60 successive waves could be counted, but they died away so gradually that one could not say when the disturbance ceased.

The E. and W. record showed some 20 barely visible undulations, the largest of which came about $2\frac{1}{2}$ seconds after the beginning of the earthquake.

It would be hazardous to draw general conclusions from these examples, which are neither numerous nor individually important. The most striking features appear to be:—(1) The very gradual beginning and ending of the disturbance. In none of the observations did the

maximum motion occur until after several complete oscillations had [47] taken place. (2) The irregularity of the motion. The successive undulations are widely different both in extent and in periodic time. (3) The large number of undulations in a single earthquake, and the continuous character of the shock. (4) The extreme minuteness of the motion of the earth's surface.

Several other earthquakes which came in November were missed because the apparatus was dismantled occasionally, to have small improvements made in it. It is now working regularly, and the writer hopes that it will in time yield results of a much more definite character as to the true nature of earthquake motion than any information we possess.

DISCUSSION.

The President congratulated Professor Ewing on having obtained what were, he believed, the first complete trustworthy records of the horizontal motion during an earthquake. The accuracy of the results would of course depend on whether the part of the apparatus which was intended to remain stationary during a shock did really remain stationary. If it did not then the records would contain an element of error due to the proper motion of that part.

Professor Ewing replied that the possibility of instrumental error, to which the President had alluded, had been carefully considered by him, and he had made experiments in order to find whether it existed and to what extent. The question was whether the bob or mass of metal at the short end of each lever did or did not remain steady during an earthquake. To test this he placed the apparatus on a table, by the shaking of which artificial earthquakes could be produced. The two levers were placed side by side. The bob of one of them was held absolutely fixed by means of a bracket from a neighbouring wall, while that of the other was left free, as it would be in the actual use of the instrument. The table was then shaken and two records of its motions were given side by side on the revolving plate, one by the free lever, the other by the lever whose bob was held fixed. The two records were found to agree with remarkable closeness. This proved that the bob of the free lever did actually remain very nearly at rest during the experiment. The motions of the table were made to resemble, as closely as possible those of an earthquake. Professor Ewing added that he expected to exhibit the new seismograph at the next meeting of the Seismological Society, when he hoped, by repeating this experiment, to be able to satisfy the members that the instrumental error was insignificantly small.

THE MINERAL SPRINGS OF ASHI-NO-YU IN THE
HAKONE MOUNTAINS.

BY A. J. C. GEERTS.

[Read December 14, 1880.]

Ashi-no-yu is one of the bathing places in Japan, well known to foreigners who reside in this country. Situated in the Hakone Mountains, at a relatively short distance from Yokohama or Tōkiyō, it enjoys a certain popularity as one of the seven celebrated Hakone mineral springs, and is consequently frequented by numerous visitors during the summer season. The village being at a height of 836 metres above the level of the sea, it is easy to understand that its temperature in the hot summer months remains much below that of the surrounding plains in which Tōkiyō and Yokohama are situated.

But it is especially the quality of the waters which attracts many patients, who try to recover their health by the use of the strong sulphureous springs. Whilst Miyanoshita, Sokokura, Kiga, Tonozaawa, Hakone and Yumoto are mostly visited by pleasure-seekers or by people whose health is not in a very bad state, we see in Ashi-no-yu principally the really sick. The nauseous smell of the waters of Ashi-no-yu and the inferiority of its lodging-house, as compared with those of the places just named, are too unattractive for persons who visit the watering-places merely in pursuit of pleasure. Dogashima, Ubago and Senkoku-hara-no-yu are three mineral springs in the Hakone range mostly used by poor people.

None of all the springs of Hakone is, however, of such real value

[49] and utility as are the springs of Ashi-no-yu, and it is for that reason that the constitution of the water there has been subjected by me to a careful analysis.

The springs which are analysed are:

1. *Tekko-sui*, a slightly sulphureous ferruginous mineral spring.
2. *Sen-yeki-to*, strongly acidulous sulphur water.
3. *Daruna-yu*, do. do. do. do.

These waters have never been analysed before in full. Dr. Martin¹ in 1875 estimated only the amount of sulphuretted hydrogen in the Ashi-no-yu springs. The numbers found by Martin differ only very slightly from those found by me.

As to the geological description of the place itself and its surrounding solfataras, I may refer to an article of Dr. Cochius² in the Journal of the German Asiatic Society.

1. TEKKO-SUI. (THE WARM FERRUGINOUS SPRING ASHI-NO-YU.)

This water possesses a smell of sulphuretted hydrogen, but its smell is much less strong than that of the two other (sulphur) springs. It has a yellowish colour and is not clear. After it has been exposed to the air, it becomes more and more turbid and of a stronger yellowish colour, whilst at the same time small clouds of iron hydroxide are separated from the water in the form of a reddish deposit. The water has a slight acid reaction, caused by the presence of a small amount of free sulphuric acid. When boiled it loses its gases (sulphuretted hydrogen and carbonic acid) and also nearly all its iron, which separates from the water as a reddish deposit.

General appearance of the water.....Turbid.

ColourYellowish; after boiling, reddish.

Taste.....Sulphureous.

SmellSulphureous.

ReactionSlightly acid.

¹ Mitth. der Deutschen Gesellschaft für Natur und Volkerk. Ost-Asiens Vol. X., July, 1876, p. 24.

² Ibid. Vol., III., Sept. 1873. p. 3.

GASES.

[50]

Sulphuretted hydrogen.....	0.000566 gramme in one litre.
Carbonic acid	much [not estimated].
Total amount of fixed matter in 1000 parts	0.160 gramme.
Oxide of iron	0.048 "
Chloride of sodium	0.039 "
Sulphate of lime	0.048 "
Silicic acid.....	0.016 "
Sulphuric acid (free)	0.009 "
Phosphoric acid.....	trace
Alumina.....	trace
Sulphur (free) as insoluble deposit	trace

It is consequently an acidulous and slightly sulphureous ferruginous mineral spring, with a relatively large amount of iron and a very small amount of saline components. The water might be used, both for drinking and for bathing in, by persons with the following diseases:—

- Anæmia:
- Chlorosis.
- Dyspepsia, caused by anæmia.
- Chronic diarrhoea.
- Leucemia and amyloia swelling of the milt.
- Chronic hydropisin, caused by anæmia.
- Scurvy.
- Difficult convalescence.
- Trigeminal neuralgia.
- Some forms of hypochondria and hysteria.

2. SEN-YEKI-TO. (HOT SULPHUR-SPRING.)

General appearance of the water.....	Slightly turbid.
Colour	Whitish.
Smell.....	Strongly sulphureous.
Taste.....	Sulphureous, disagreeable.
Reaction	Slightly acid.

[51]

GASES.

Sulphuretted hydrogen.....	0.0272 gramme in one litre.
Carbonic acid.....	much [not estimated].
Total amount of fixed matter	0.620 gramme in one litre.
Free sulphur (as deposit)	0.013 "
Sulphide of sodium	0.017 "
Chloride of sodium	0.129 "
Sulphate of lime	0.318 "
Free sulphuric acid.....	0.011 "
Oxide of iron	0.003 "
Silicic acid.....	0.103 "
Phosphoric acid	trace
Alumina	trace

The water is therefore an acid, strongly sulphureous spring, with a large amount of sulphuretted hydrogen, a small amount of sulphide of sodium and with relatively little saline matter in it.

3. DARUMA-YU. (HOT SULPHUR SPRING.)

General appearance of the water.....	Slightly turbid.
Colour	Whitish.
Smell.....	Strongly sulphureous.
Taste.....	Sulphureous, disagreeable.
Reaction	Slightly acid.

GASES.

Sulphuretted hydrogen.....	0.0328 gramme in one litre.
Carbonic acid	much [not estimated].
Total amount of fixed matter	0.600 gramme in one litre.
Free sulphur (as deposit)	0.008 "
Sulphide of sodium	0.023 "
Chloride of sodium	0.151 "
Sulphate of lime	0.285 "
Free sulphuric acid.....	0.008 "
Oxide of iron	0.007 "
Silicic acid	0.143 "
Alumina.....	trace
Phosphoric acid.....	trace

This water is consequently of the same quality as the former. [52]
Both the latter springs might be very useful in the following diseases:—

Acute and chronic muscular rheumatism.

Stiffness of the muscles.

Diseases of the skin, such as Eczema, Prurigo, Psoriasis, Chronic Erysipelas.

Syphilis.

Chronic poisoning by lead or mercury.

Abdominal plethora.

Chronic catarrh of pharynx and larynx.

Chronic inflammation of the uterus and ovaria.

Irregular menstruation.

Neuralgia, caused by rheumatism.

The importance especially of the two latter sulphur springs would make it very desirable to ameliorate the present uncomfortable arrangement of the bathing places at Ashi-no-yu. The hotels, the food, the bathing rooms, the bathing tubs, the dwellings, all require a better arrangement especially for the spring, autumn, and winter months. The road leading from the foot of the hills at Yumoto to Ashi-no-yu could also be arranged so that the sick might be conveyed more easily to the latter place. Finally an arrangement must be made for collecting the water directly from the springs for drinking purposes, as the patients ought not only to bathe in the water, but also to drink a certain quantity (say from 300 c.c. to one bottle daily), after it has been cooled to the ordinary temperature. It would indeed be a great boon to the many sufferers from rheumatism in this country, if there were erected at Ashi-no-yu a well arranged sanitarium and bathing establishment, with an educated, specially trained Japanese doctor attached to it.

The short distance of Ashi-no-yu from densely populated towns and from the metropolis, combined with the excellence of its sulphur waters, seems to be a sufficient reason why that place should be preferred above other sulphur springs beyond Nikkō and elsewhere.

[53] EVIDENCES OF THE GLACIAL PERIOD IN JAPAN.

 BY J. MILNE.

[*Read December 14, 1880.*]

When in 1840 Agassiz first announced to the scientific world that the curious striations which cover the rocks of Northern Europe had been produced by the agency of glaciers, and that in consequence it was probable that countries like Scotland had once been buried beneath a sheet of ice, he furnished materials for astonishment and scepticism. His views, however, have withstood the test of rigid examination, and every one is conversant with what may now be called a fact, namely, that in bygone times much of Northern Europe was shrouded in a veil of ice as great and may be greater than that which now envelopes Greenland. Since this time the subject of glaciation has been studied in all its aspects. The glaciated countries have been described and mapped, theories have been formed to explain the causes which produced these great phenomena, and generally the workers in this interesting field have been so busy amassing facts and evolving theories that the writings on the subjects connected with glaciers and the glacial period would of themselves form a goodly library. Notwithstanding all these labours, so far as I am aware it is but little that has been written about the evidences of a glacial period in the western portion of the Pacific Area, and about the evidences of this period in Japan not anything.

The general object which I have in view is to show that at the time of the Glacial Epoch in Europe and America, there was in Japan a period colder than the present one, and previous to this

time, also, as in other countries, there was a period which was warmer than the present one.

To prove this, various arguments are brought forward. Many [54] of these are purely speculative; others, however, are, I hope, sufficiently well supported by facts. The facts which I adduce are to a great extent the result of personal observation made whilst travelling over various portions of Japan and the Kurilè Islands. Others have been collected from the writings and remarks of those who have studied the subjects to which I refer. If my speculations are found to be at fault, I at least hope that the few facts which I bring forward may be of value.

REASONS WHY WE SHOULD EXPECT TO FIND TRACES OF A GLACIAL PERIOD IN JAPAN.

1. As to whether we are justified in seeking for traces of a glacial period in Japan will depend very largely upon how we suppose that glacial period to have been occasioned. There is no doubt, as has been so ably advocated by Sir Charles Lyell, that a glacial period might result from geographical changes. An alteration in the direction of the Gulf stream, say for example by the opening of a huge inter-oceanic canal through the Isthmus of Panama, might possibly convert much of north-western Europe into a dreary waste of ice and snow, and countries like Britain, whose wealth depends upon her fleet of merchant ships, might at six months' notice become bankrupt and be incarcerated in a glacial prison. Alterations in the areas of our continents might produce similar results. If we regard a glacial period to have occurred in any such manner as these, because there has been a glacial period in the Western Hemisphere it is no reason why we should endeavour to find one in the Eastern. If, however, the vicissitudes of a glacial period were brought about by changes taking place outside our earth, the case would be different.

Thus, for instance, if a glacial period had been produced by a diminution in the quantity of heat radiated from the sun, as has been suggested, then the glacial period of one hemisphere ought to be contemporaneous with that of the other, and if in Europe we

find ice markings in the latitude of Southern Sweden, we certainly should be justified in expecting to find them also in latitudes approximately the same all round the Northern Hemisphere.

[55] Among the various astronomical theories which have been brought forward to explain the glacial period, the one so ably advocated by Mr. James Croll is that which appears to have gained the greatest acceptance.

Following the view of Mr. James Croll, a glacial period would occur when the eccentricity of the earth's orbit was at its greatest limit and the winter in aphelion. By this the winter temperature would be lowered and the winter lengthened, and snow would accumulate. In the Southern Hemisphere an opposite effect would take place, and these conditions, amongst other things, would cause a deflection of ocean currents. And just as Mr. Croll shows that the Gulf stream might be cut off from the North Atlantic, so might the Kuro Siwo be deflected from Japan.

To determine accurately what would be the effect of cutting off the Kuro Siwo from Japan would be a difficult matter, but that the effect would be great there is but little doubt.

The Kuro Siwo as a carrier of warm water from the tropics towards the poles has been reckoned three times as great as the Gulf stream. Its general course may be seen on every physical atlas. Its average width might be roughly stated as being about 100 miles: its velocity three miles per hour. Its temperature has been observed to be from three to four degrees above that of the surrounding ocean: eight to ten degrees above certain streaks of cold water which along the coast of Japan appear to be interstratified with it. The southern shores of Japan are altogether bathed by it. As it goes farther north it trends away out into the Pacific. [See Transactions of the Asiatic Society of Japan, Vol. II., "Winds and Currents in the Vicinity of the Japanese Islands:" by Capt. A. R. Brown.] A portion of it passes through the Straits of Korea, and from the manner in which vessels bound towards the north appear to overrun their distances, as is indicated by their logs, it makes itself felt as far as and beyond the Tsugaru Straits.

Mr. Croll tells us that in consequence of the Gulf stream our

mean annual temperature is raised 15° above the normal, and Prof. Haughton calculates that the mean annual temperature of Spitzbergen is raised in consequence of the Gulf stream $11^{\circ}.5$ F.

If the effects of the Gulf stream are then so great, we can infer that the effects of its Pacific rival may be even greater, and the cutting off of this stream from the shores of Japan might be certainly sufficient to cause a glacial period on many of its mountain tops, if not also on its plains. [56]

Should the Kuro Siwo, instead of being altogether cut off from the shores of Japan, be only partially retarded or deflected, its course would probably be invaded by the cold current called the Oya Siwo coming from the Okhotsk. This current, which is from 12° to 20° colder than the Kuro Siwo, already comes as far south as the southern parts of Yezo, and even at times a short distance down the shores of the main island. In the northern part of Yezo, which is altogether in this current, every winter we have a fringe of ice many miles in width. If this current flowed all round Japan, its influence in altering the climate would certainly be very great.

Between Inuboye and Kinkazan it would appear that sometimes a current is experienced running towards the north and sometimes towards the south. Several explanations might be offered for this phenomenon. Should it mean that the Oya Siwo sometimes forces itself farther south and displaces the Kuro Siwo, evidence of which might be given by temperature observations, we should here have a means of understanding the variations in the fauna of Yedo Bay, which seem to have taken place in recent times. The same phenomenon might, however, be explained on the supposition that the relative position of this current and its eddy are interchangeable.

Many other theories have been brought forward to explain a glacial period, but in most if not in all cases, if they are the means of explaining why there was a glacial period in Europe, they demand that a glacial period should also have taken place in Japan. Looking at the theoretical aspect of the question, we may say that it is possible that a glacial period may have existed, and in looking for it we are certainly not acting unreasonably.

2. Another strong reason why we should search for traces of glacial

action in Japan is that such indications have been found at latitudes farther south than portions of Japan in other countries which are also situated in the Northern Hemisphere.

Thus, in North America the drift extends as far south as 39° [57] N. Lat., *i.e.*, to about the latitude of Sendai. In Europe it only extends to 50° N. Lat. On high mountains both in America and Europe, in latitudes far to the south of all Japan, there are evidences to show that the glaciers once extended much lower than they do at present.

In the Sierra Nevada we have evidences of old glaciers down to 30° N. Latitude. Many of these old glaciers have been described in detail. Le Conte speaks of one which was 40 miles long and 1000 feet in thickness. Evidences of glacial action have been found in Virginia, in Nicaragua, the south of Spain, the Atlas Mountains, Lebanon, to within 4000 ft. of sea level on the Himalayas, and in Brazil even under the Equator.

Under these circumstances it is hard to imagine that while all these countries to the east and to the west of Japan were passing through a period when the climate was evidently so much severer than it is at present, Japan was omitted and left out, not in the cold, but in the heat.

DISTRICTS WHERE THE EFFECTS OF GLACIATION ARE MOST LIKELY TO BE MET WITH.

In searching for glacial action in Japan we should probably be most successful if we were to choose those districts where the climate at the present time is most severe and the conditions are such that the greatest quantities of snow accumulate. For these reasons we should be more likely to find what we seek for in northern rather than in southern regions, and in the western rather than in the eastern. The difference in the climate between the east and west part of Japan has been remarked upon by almost every traveller. On the east side, for instance, we see during the summer a mountain like Fujiyama, nearly 13,000 feet in height, entirely devoid of snow, whilst upon the west coast almost every mountain half the height is perpetually covered with patches and large fields. The

different temperatures which we find in different parts of Japan and the different amounts of moisture which is precipitated in the form of rain or snow, may be judged of from the following records, which have been extracted from the tables published at the Imperial Meteorological Observatory of Japan for 1879, kindly furnished me by Mr. Araki Ikunosuke.

	Long.	Lat.	TEMPERATURE.					RAIN FALL.			
			Jan. to Mar.	Apr. to June	July to Sept.	Oct. to Dec.	Yearly mean	Jan. to Mar.	Apr. to June	July to Sept.	Oct. to Dec.
Nagasaki	129.51.30 E.	32.44.28 N.	46.5	64.9	78.9	54.8	61.1	11.2	28.7	22.9	8.6
Hiroshima	132.27.16 E.	34.20.00 N.	42.9	61.5	78.1	51.8	59.1	8.9	26.6	14.5	5.1
Tokio	139.45.16 E.	35.39.50 N.	41.9	63.2	76.5	51.6	58.3	11.2	21.2	12.2	14.0
Hakodate	140.41.24 E.	41.46.30 N.	31.2	51.5	67.9	42.9	48.3	10.7	8.9	24.7	12.7
Sutpore	141.22.37 E.	43.03.57 N.	25.4	50.3	67.6	47.8	45.1	14.3	6.6	17.0	17.6
Bannoppe	141.36.25 E.	43.57.25 N.	26.3	48.4	65.6	38.0	44.0	11.7	10.1	17.2	16.8

[58]

The great differences in temperature which may be here observed are to a great extent due to latitude, but also, I imagine, to the influence of ocean currents. Most parts of Japan are characterized by the great extremes of temperature they experience. The lowness of temperature which is experienced in the latitude of Tōkiō may be judged of from the fact that during the month of December, 1880, Messrs. Satow and Hawes, whilst travelling round the eastern part of Yedo Bay, observed that in the early morning the sea was frozen out from the shore for a distance of fifty yards. Records enabling us to compare the east and west coasts of Japan are rare.

Dr. Rein tells us that the average annual temperature of Niigata (Lat. 39.58 N.) is 13.11° C. (65° F.), which is from 1° to 2° C. (1.8° to 3.6° F.) lower than that of Tōkiō ("The Climate of Japan:" Transactions of the Asiatic Society of Japan, Vol. VI., Part V). This difference in temperature does not appear to be due to variations in the summer months, but rather to the greater cold of

Niigata in the winter months. On the average, in Niigata there are 32 days of snow-fall, whilst in Tōkiō we seldom have more than three or four. The depth to which the snow accumulates in some of the towns and villages in the northern and western parts of Japan is often very great. In Awomori I have been assured that it is the usual thing to have the snow in the streets level with the eaves of [59] the houses. A long distance farther south, but at higher elevations, the accumulation is equally great. Dr. Rein says that at heights of 700 to 800 metres in villages situated in the mountains of Kaga it is not unusual to have a depth of from 18 to 20 feet of snow, whereas at similar elevation on the opposite side of the range there is not more than one to one and a half feet.

The great difference between the duration of the snow upon the mountains on the western side of Japan as compared with its duration upon the eastern, I should be inclined to attribute to the following causes: First, upon the western portion of Japan we have, during the winter months, a greater accumulation of snow than there is upon the eastern, and the quantity being greater, the time required to melt this must be greater, and therefore we see snow lingering upon the western mountain long after the eastern mountains have become bare; secondly, the eastern side of Japan, in consequence of its greater proximity to the Pacific Ocean and the main body of the Kuro Siwo, is warmer than the western parts.

The greater snow-fall of west Japan is apparently due to the cold dry north and north-west winds which prevail during the winter months, picking up moisture from the Japan sea and depositing it upon the first high land, which will be the mountains of West and North Japan, with which it comes in contact.

If these winds were colder or continued for a longer period, as they might if the length of our winters were increased, they would greatly assist in bringing about glacial conditions.

We have, then, in western and northern Japan, conditions eminently suited for the production of a glacial climate on the recurrence of phenomena like the increase in the eccentricity of the earth's orbit, which has been shown to be the best explanation for the glacial period of Northern Europe.

From the calculations of Leverrier, which were corrected and increased by Stockwell, we know that if the glacial period depended upon eccentricities in the earth's orbit it must have taken place many thousands of year ago. As many of the highest mountains in Japan are modern volcanoes of very recent origin, it may be well to consider whether it is probable that these peaks were in existence at the time of a glacial period.

According to Stockwell's tables, our glacial period may have [60] occurred between 980,000 to 720,000 years ago, during which time the length of the winters exceeded the length of the summers from 14 to 23 days. This period might also have been between 240,000 to 80,000 years ago, when the winters exceeded the summers by from 15 to 26 days. Mr. Croll tells us that most geologists assign the glacial period to the former of these epochs. He himself, however, refers it to the more recent period.

The question which here presents itself to us then is, what may have been the state of some of the Japanese mountains 800,000 years or even 80,000 years ago? So far as the most prominent of these mountains, which, like Fujiyama, are of recent volcanic origin, are concerned, we can reply that the probability is that in those times they did not even have an existence. Most certainly they did not have their present forms. Even if we take the shortest period, viz., that of 80,000 years, we should still assert, and I think with reason, that even if these volcanoes had an existence, their contours, if ever moulded by ice, were long ago destroyed or else buried by subsequent eruptions.

It is not then towards the volcanic mountains of Japan that we should turn if we expect to find traces of glaciation, but rather towards mountains which are not of a recent volcanic origin, and which are composed of materials not liable to be easily decomposed or worn away.

THE PRESENT STATE OF SNOW FIELDS AND GLACIERS (?) IN JAPAN.

At the first sight it would appear that the most likely localities in which to find traces of glaciation would be on those mountains where we still find snow fields of considerable magnitude. Unfortunately the greater number of those on which there is perpetual snow

are mountains of recent volcanic origin. However, as the beds of snow and snow consolidated into ice upon these mountains help us to conceive of the changes necessary for the glaciation of lower levels, I will enumerate those with which I am acquainted, commencing from the north and coming south.

[61] *Iwakisan, N. Lat. 40° 22'.*—I climbed this mountain on the 5th August, 1879. At a height of about 4100 feet narrow gulches filled with thick beds of snow were met with. The mountain is of recent volcanic origin.

Iwatesan or Gaijūsan, N. Lat. 39° 50'.—This mountain lies on the eastern side of the western hills. I ascended this on the 21st August, 1877. Its height is about 7000 feet. No snow was met with. The mountain is an active volcano.

Chōkaizan, N. Lat. 39° 5'.—This mountain was ascended on July 30th, 1879. The first snow field was met with at a height of 4800 feet. One snow field up which I travelled was from one-half to three-quarters of a mile in length and upwards of 100 yards in width. Its surface was covered with moraine and in places it appeared to be consolidated into ice. The total height of the mountain I found to be about 6000 feet. Mr. Gowland of Ōzaka makes it 6800 feet. The mountain is of recent volcanic origin.

Gwassan, N. Lat. 58° 35'.—Details of this mountain will be found further on. Its height is about 6000 feet (Gowland, 6100 feet). The snow fields (27th July, 1879) were from one to 400 yards in length. The core of this mountain may be composed of volcanic rock, but the flanking schists seem to indicate that it is of great age.

Bandaisan, L. Lat. 37° 35'.—This mountain is in the central part of the main island, to the east of the western mountains. When I ascended it (July 20th, 1879) no snow was met with. Its height is about 5100 feet. It is of recent volcanic origin. Snow was seen in patches on the mountains to the N. W.

One of the most important groups of mountains in Japan are those which are situated in and around the province of Hida. The most noticeable chain in this group is that which commences near the west coast, in the south of the province of Etchū, and then runs southwards between Hida and Shinano. Personally, I know

but little of these mountains, only having made a single journey along their eastern flanks. At the time, however, I was able to collect a few rock specimens and to observe their general form. The greater number of these mountains have been ascended by Mr. W. Gowland, of Ōzaka, who has furnished me with a table of their heights, and given me the opportunity of examining the rock specimens which he has collected from them. In the following notes upon these mountains (for which notes my thanks are almost entirely due to Mr. Gowland) I will commence at their northern end—that is, with those hills situated most closely to the western coast. [62]

Miōkōzan, N. Lat. $36^{\circ} 55'$. and *Kurohime* N. Lat. $36^{\circ} 50'$. These are well formed cones and therefore probably volcanic.

Yakeyama, N. Lat. $36^{\circ} 55'$, Height 7,600 feet.—Near the top of this mountain there is a small solfatara. From its rocks it is probably an old volcano. Scoriaceous lava, however, has not been observed.

Tareyama, N. Lat. $36^{\circ} 35'$, Height 9,500 feet.—An old volcano, parts of which are in a solfatara-like state. Mr. Gowland tells me that this is by far the most snowy of any mountain he is acquainted with. Several of the snow-fields are over half a mile in length and perpetual.

Jūdake, N. Lat. $35^{\circ} 40'$, Height 8,600 feet.—This mountain is rounded on the top and granitic. On July 18th Mr. Gowland met the first snow field at a height of about 4,700 feet.

Gorokudake, N. Lat. $36^{\circ} 33'$, Height 9,100 feet.—The summit of this mountain is rounded. It is made up of a felspathic porphyry (old volcanic) and granite.

Yarigatake, N. Lat. $36^{\circ} 15'$, Height 10,300 feet.—This mountain, which appears to be the highest in the range, seems to be made up of volcanic rocks which in places are somewhat vesicular. Mr. Gowland met the first snow at a height of about 6,300 feet (Bar. 23.63), and from this elevation it was continuous to the summit. As this mountain appears to be the oldest part of the range, it would seem that we ought here to find evidence of the former existence of glaciers if any existed. Mr. Gowland, however, did not observe any such evidence. On July the 28th the beds of snow may have been 20 feet in thickness.

Norikura, N. Lat. $36^{\circ} 40'$, Height 9,800 feet.—Here old lava streams are to be observed, and also hot springs. The rocks are in places scoriaceous.

Ontake, N. Lat. $35^{\circ} 52'$, Height 9,930 feet.—On the sides of this mountain you find porphyritic granite and also obsidian. On the top, which is much weathered, a gray trachyte, which in places is pumiceous.

On the whole, we might describe this range as being to a great extent granitic, with here and there a peak which is volcanic. Some of these peaks, like Tateyama, Norikura and Ontake, shew evidence of [63] having been in a state of eruption at a later date than many of the others. However, as all these mountains are, as compared with other volcanic mountains of Japan, extremely old, it is possible that some of them may yield us evidence of former glacial action.

On the N. W. side of Hida there is another group of high mountains, the most important perhaps of which is Hakusan, N. Lat. $36^{\circ} 8'$. Its height is 8,600 feet. Flanking its sides there are beds of sandstone, but on the top dark coloured andesite; at the base there are some hot springs. Like the mountains just spoken about, it is volcanic, but probably very old. At the bottom of one of the snow-fields on this mountain Mr. Gowland tells me that there is a crevass 20 feet in depth.

Mr. R. W. Atkinson, writing to me about the snow-fields of these districts, says that he should think that the snow-line on Hakusan was about 5,000 feet, and on Tateyama 5,300. These are the lowest points at which snow occurred in the month of August. On both of these mountains the snow was only found in those valleys which faced east and north. Mr. Atkinson remarks that the surface of the snow was hard, and it would not be improper to call it ice. The length of these snow fields was from 300 to 400 yards.

Mr. Edward Kinch, writing to me about the Hari-no-ki tōge, which is one of the highest passes in Japan, lying to the North of Tateyama, says: "The height of the mountain is roughly about 8000 feet, and there was snow on it down to about 3000 feet from the top. On the east side we crossed three or four snow beds and

miniature glaciers. On the west side there was scarcely any snow." This was on the 25th July, 1878.

Dr. Divers, speaking to me about the snow-fields in the same districts (as seen in midsummer), remarked that some of them shewed all the characters of glaciers. There were lateral moraines on the surface and terminal moraines at the end, whilst beneath there was a stream of water which ran out of a cavern-like opening in the face of their lower extremity. Other visitors to this district confirm these observations.

We may therefore conclude our remarks upon this portion of our subject by saying that at a height of about 5000 feet in Middle Japan, and about 4000 feet a little farther north, near to the [64] western coast, we find fields of perpetual snow. And some of them are so far consolidated as to form *pyu glaciers*.

TERRACE FORMATIONS AS AN EVIDENCE OF GLACIAL CONDITIONS.

Assuming a glacial climate to have occurred over Northern Europe, at such a time we should have a large accumulation of ice round the polar regions, and in consequence a displacement in the earth's center of gravity. According to Mr. Croll, this shifting of the earth's center of attraction farther towards the north would occasion a rise in the waters round the North Pole of 380 feet, and in the latitude of Edinburgh of 312 feet. This may have been increased by the melting of the ice upon the Southern Hemisphere more rapidly than its formation at the poles. According to other computations, the rise at the North Pole may have been from 650 to 2,000 feet. As a proof that conditions such as here implied have really had an existence, Mr. Croll tells us that geology is fast establishing the fact "that when the country was covered with ice, the land stood in relation to the sea at a lower level than at present, and that the Continental periods or times when the land stood in relation to the sea at a higher level than now were the warm inter-glacial periods." As during the glacial epoch there was a succession of cold and warm periods, there would consequently be elevations and depressions of sea level. Evidences of actions such

as these are furnished to us in our submerged forests and our raised beaches.

Assuming Mr. Croll's conclusions to be correct—and they are certainly most difficult to escape from—the terraces or old sea cliffs which we find in so many places round the shores of Northern Japan may *possibly* be an evidence of glacial conditions. These terraces are especially well marked round the shores of Yezo, and in the Kuriles certainly as far as Iterup.

[65] In connection with the subject on which we now write, Dr. Woodward has, in a presidential address to the Geologists' Association, pointed out that since the close of the great Ice Age there is clear and indisputable evidence of the rise of land towards both the North and the South Pole. Here and there I may remark that we have evidence of movements in the opposite direction. In regions which are between the tropics we have evidences both of rises and falls.

No doubt some of these movements may be due to movements in the crust of the earth, but as Mr. Croll has argued, they may also be due to the movement of the waters. In countries which are volcanic, movements of the land may be due to expansions in the crust of the earth.

As a further confirmation of Mr. Croll's theory, might we not enquire whether the raised beaches and terraces of high latitudes are in the average higher than those of low latitudes? Speaking from my own experience in Japan, this may be answered in the affirmative. On the main island of Japan I have no distinct recollection of raised terraces, but in Yezo and the Southern Kuriles I have seen many. On all the coast line near Hakodate (42 N. Lat.) terrace formations are well marked. I have seen them all along the east coast as far as Cape Erimo, and on the west coast near Matsumai, and in the north at Nemoro. In the Kurile Islands I have seen them in Kunashiri and Iterup.

The following are a few out of a large number of notes relating to sea terraces which I have made when on visits to Yezo and the Kurile Islands.

To the south of Esashi and between it and Matsunami, well formed terraces may be seen at many points along the coast. They

usually appear like three steps or cliffs. The lowest one is a short distance above sea level. The total height from sea level to the foot of the upper cliff may be perhaps 50 to 100 feet.

Near Iwanai, after crossing Raiten yama, there is a well marked old sea cliff about 40 feet in height. It forms the termination to a gently sloping plain running down from the hills. The materials of which this plain is composed are boulders and gravel.

The road leading out of Hakodate going towards the farm at Nanai rises up over two terraces. The first of these is a sudden rise of about 20 feet.

On the west coast of Iterup, at Furabets and its neighbourhood, the coast is very clearly marked with terraces. From sea level up to the top of the first, which is at the same level as the foot of the second, the height as measured by an aneroid was 130 feet.

On the east coast of Yezo terraces are also to be seen. At [66] Horoidzumi there are two such terraces. The height of the lower one (which will be the foot of the higher one) is perhaps 50 feet above sea level. [See Report on the Gold Fields of Yezo: by Henry S. Munroe, E. M.]

Very much might be written on the sea terraces of the northern parts of Japan. Every visitor to Yezo must of necessity observe them. They are several times referred to in Mr. Lyman's valuable reports on the Geology of Yezo.

Mr. Lyman, writing to me about sea terraces in Yezo, speaks specially of one to the south of Iwanai which is very well defined. It is perhaps 20 feet in height.

Speaking generally, I should then say, first, that the old sea cliffs of Northern Japan are very well defined, and that those in the higher latitudes indicate a descent of the sea relatively to the land, greater than that which is indicated by the more southern ones. It would be interesting to compare this observation with others made in different parts of the Northern Hemisphere.

Mr. Henry H. Howarth, in a paper on "Recent Elevations of the Earth's Surface in the Northern Circumpolar Regions" (see Journal of the Royal Geographical Society, Vol. XLIII.), tells us

that M'Clure found shells of *Cyprina Islandica* at the summit of Coxcomb Range, in Baring Island, at an elevation of *eight hundred feet* above the sea level.

Captain Parry records the occurrence of sub-fossil shells in Byam, Martin Island, at heights of from 100 to 500 feet.

Near the North Cape there is evidence of an elevation of 600 feet.

Oyster beds have been found at a height of 200 feet near lake Wener.

Near Stockholm there is evidence of an elevation of 70 feet.

From my own observations in Newfoundland, I should certainly say that there is evidence to shew that in very recent times the sea relatively to the land has been 50 feet higher than it is at present.

To the North of Japan, in Behrings Straits, we have evidence of considerable elevation, and also in British Columbia, on the western side of North America.

[67] In looking over the few examples which have been quoted, it might seem that in the more northern latitudes we have traces of the sea having been relatively to the land at higher levels than it has been in more southern latitudes. This, however, is a conclusion which, before it can be accepted, needs the collection and careful examination of a very much larger number of records than I have been able to bring forward. As a further confirmation of Mr. Croll's theory, we should generally expect to find indications of the same extent of oscillation so long as we examined places lying in the same latitudes. And lastly, if the change in level of the ocean is taking place in consequence of conditions similar to those suggested by Mr. Croll, the districts where we should expect to find these oscillations the most pronounced, would be in the Arctic regions,—and certainly, from all that we know of the rapid changes which are taking place on the movements of the sea level, they do not seem to be anywhere better marked than they are in northern latitudes.

In conclusion then, we may say that the evidence, such as we have, respecting the recent elevation of coast lines generally, appears to support the theory advanced by Mr. Croll, and as the

old sea cliffs of Japan are in conformity with this evidence, it seems just as likely that they are indications not simply of changes in level of the sea, but of changes of level of the sea produced by changes of climate, as that they are the indications of an upward movement of the earth's crust.

RELATION BETWEEN THE DISTRIBUTION AND NATURE
OF THE PRESENT FAUNA AND FLORA OF
JAPAN TO ITS FORMER CLIMATE.

1.—*The Flora.*

A more definite and satisfactory manner of answering the question which is before us would be to bring forward evidence to show that there are actual traces of a glacial period still existing in the country. For instance, it might be asked whether any of the peculiarities in the distribution of plants and animals which we see around us can be satisfactorily explained by the former existence of a glacial period? Do we, for instance, find upon the summits of the higher mountains a fauna and flora characteristic of higher latitudes? The explanation of phenomena like these by their relation to a glacial period are familiar to us all. Unfortunately we are hardly yet in the position to enter upon questions of this description—the distribution of the fauna and flora of Japan being at present [68] in most of its departments but imperfectly known. A few general remarks, however, upon these points may not perhaps be out of place. Dr. Savatier, writing "On the Increase of the Flora of Japan" (see Transactions Asiatic Society of Japan, Vol. II.), points out the connection which exists between the plants of Japan, those of Eastern Asia and the eastern region of North America. In looking through the list of plants given by Dr. Savatier, we also notice that many plants which are found upon the high ground in Central Japan, as for instance at Hakone and Nikkō, are also found farther north, but at lower levels, as for instance at Hakodate.

Dr. J. Rein, speaking generally about the flora of Japan, remarks (see "Der Fuji no yama and seine Besteigung" Petermann's

Geograph: Mitt: 1879, Heft X) that the flora of the high mountains of Japan seems to consist of a mixture of plants of the northern forest regions of the old continent and those from Canada, the Polar regions, and some Alpine ranges. It has reached Japan from East Siberia and Kamschatka by currents and winds.

Whilst travelling in Japan I have ascended a few of its mountains. In central and northern Nippon I climbed Asama, 8,500 feet; Bandaisan, 5,100 feet; Gwassan, 6,100 feet (Gowland); Chōkaizan, 6,800 feet (Gowland); Ganjūsan, 7,000 feet; Iwakisan, 5,000 feet; and from the higher part of each of these I have brought away a few specimens of common plants. These were placed in the hands of my friend Mr. James Bisset of Yokohama. In no case, so far as I am aware, did I collect anything which was not found at lower levels or a few degrees farther to the north. A few notes collected from conversations with Mr. Charles Maries, a gentleman who spent several years in collecting plants in various parts of Japan, confirms this view. Amongst the many plants which repeat themselves farther north, the following are a few prominent examples: At an elevation of 4,000 feet, in 36.43 N. Lat., at Chūzenji, we find the Berberry; on Hakodate head, 41.46 N. Lat., we find the same plant. Again, in all the forests of Yezo we meet with the strongly scented *Magnolia macrophylla*. This repeats itself in 36.43 N. Lat. upon the [69] Nikkō mountains. *Abies firma*, which is common on all the mountains of Japan, is found at lower elevations in Yezo. The white-leaved climbing *Actinidia polygama*, which is common on all the mountains of Central Japan as far south as Kōbe, is also found in Yezo. The Magnoleaceous *Circidiphyllum japonicum* is found on the slopes of Fuji yama in the south, and again in Yezo in the north. The white-barked birch (*Betula alba*?) occurs in the mountains of mid-Japan and again at lower levels in Yezo. The beech and horse chestnut, which are found on the low ground in Yezo, are, farther south, only found at elevations of from 5,000 to 7,000 feet. To these, others might be added, but as Mr. Maries remarked to me, and I do not know of any one who had better opportunities of acquiring information, in central Nippon above 2,000 feet, you find nearly every thing which is to be found in Yezo.

As examples of a similar distribution I may mention *Anemone raddeana*, which was found by Mr. Satow on the top of Miōkō-zan (5000 feet), occurring close to Hakodate. *Glaucidium palmatum* and *Diphylleia Grayi*, found at a height of 4000 feet on Miōkō-zan, and 5,000 to 6000 feet on Tateyama, have been found at Soya in North Yezo.

Also on the top of Ibukiyama in Mino (about the same height as Hakone), Dr. Rein found a similar vegetation to that inhabiting the highest points of the Hakone range lying farther to the north.

If we were to strictly adhere to the well known theory of Professor Forbes respecting the relation between the distribution of plants and glacial periods, such a distribution as the one just indicated might be taken as a strong indication of a former period of cold. In the cases of most of the mountains with which I am personally acquainted, Forbes' theory, which so well explains the origin of the fauna and flora of the Alps and other mountains, will hardly be applicable. These mountains are in nearly every case volcanic, and if they have not been active within the historical period, their shape and structure shows that they most certainly have been active within a period of 80,000 years, which is the smallest limit of years which we can allow to have elapsed since the occurrence of a glacial period. At the time of these eruptions, every plant upon their higher slopes must have been repeatedly destroyed, and the vegetation which we now see upon their summits and filling their old craters has established itself subsequently to a glacial period. In cases like these, an Arctic flora upon the higher portions of a mountain situated in a temperate clime would not be indicative of a glacial climate. Neighbouring mountains which are not volcanic may possibly have received their colonies of plants which belong to more northern latitudes at the time of the withdrawal of a snowy covering from the lower grounds, and perhaps it is from these, as waifs and strays carried by the wind, that the volcanic cones have received their peculiar flora. If this has been the case, then the flora of the mountain tops, repeating themselves farther north in Yezo, may be taken as an indication of a former climate which was more severe than the present one. [70]

The Flora of Yezo as Compared with that of Nippon.

If you travel in the north part of Nippon, you notice almost everywhere large quantities of *Conifera*. Directly you cross the Tsugaru Straits and enter Yezo, you are at once struck by the absence of *Conifera* and the predominance of deciduous trees. You seem to have suddenly entered into a country where the character of the forests has entirely changed. Had I not travelled a considerable distance in Yezo, I might have left the country with this belief. The fact, however, is that the hard wood so characteristic of the neighbourhood of Hakodate (excepting the town itself, where there are one or two groves of *Cryptomeria*) and the road to Sapporo, is only to be found upon the lower ground. On the mountains, as for instance along the south-east coast of Yezo and also farther north, as near Nemoro, a great variety of *Conifera* are to be met with. Mr. Maries told me that he had met with no less than eight species, one of which, *Pinus cembra* var. *pygmaea*, was only found in Yezo and Northern Asia. A tree which is very similar, *Pinus cembra*, is found on the west coast of North America. Mr. Maries also remarked that so far as he knew, the probabilities were that the only plants peculiar to Yezo and not found in Nippon might be a few ferns and herbaceous plants.

2. The Fauna of Japan.

From the plants I will pass on to the fauna. Mr. Wallace, writing on the fauna of Japan, says, in conclusion to previous remarks: "From a general view of the phenomena of distribution, we feel justified in placing Japan in the Palæarctic regions; although some tropical groups, especially of reptiles and insects, have occupied its southern portions" (*Geographical Distribution of Animals*, Vol. I., p. 230). Further on he remarks upon the mixture of Palæarctic and tropical which occur in Japan, and in the extreme south he tells us that the "most abundant forms of mammal bird and insect are modifications of familiar Palæarctic types. The fact clearly indicates that the former land connections of Japan with the continent have been in a northerly rather than in a southerly direction." So

far as the observations upon the insects of Japan are concerned, nearly the whole of Mr. Wallace's remarks are based upon the unrivalled collections of Mr. George Lewis. As Mr. Lewis has returned to Japan to continue his researches, I have fortunately been able to communicate with him on the distribution of the insect fauna of this country. Speaking generally, he says: "The fauna of Yezo is essentially the same as in the north of the main island, and amongst the Geodephaga, I found several species at the sea level near Hakodate which I used to get on the highest elevations at Nagasaki: but this feature is not to my mind so prominent as it is in the same area of Europe. Roughly speaking, the Coleoptera of Japan consist of species derived from the same source as those of Northern Asia and Europe, with a considerable element from the tropics. A few links come from America, and I was under the impression that the Aleutian and Kurile Islands might have bridged over the space between the two continents (before the life-time of the present species), but it is easier to believe that the paucity of the analogous genera is owing rather to the comparatively recent formation of these groups. I am indebted to you for this last observation, which has interested me very much. The connection of the beetle fauna of Japan with that of the Phillipines, has to my mind been much strengthened by my recent investigations in Yezo, etc."

Sir Charles Lyell (*Principles of Geology*, Vol. II. p. 345) also makes reference to the fauna of Japan. He says: "Although the batrachians of Japan are all Palearctic, the snakes agree in genera and species with those of the more southern parts of Asia in the Indian region." After this he speculates on Japan having once been united, 1st with Northern Asia and received its batrachians, and 2nd, with Southern Asia through Loochoo to receive its snakes.

Differences Between the Fauna of Yezo and that of Nippon.

What differences may exist between the fauna of Sagalin and the mainland or between Sagalin and Yezo I am not at present in a position to state. There does not appear to be any reason why [73] the fauna should be much different to that of the mainland. The differences between the fauna on the two sides of the Straits of

Tsugaru, so far as the larger animals are concerned, are very striking.

In Yezo we find a large northern bear, a ptarmigan and nine other birds which are not found on the main island. In the north of the main island we find a small southern bear, sheep-faced antelope, monkey, the pheasant and other species of birds which do not cross over into Yezo. These remarks are founded on an article upon the birds of Japan by Messrs. Blakiston and Pryer (see Transactions of the Asiatic Society of Japan, Vol. VIII. part II). As an explanation for these differences in the fauna on the two sides of the Tsugaru Straits, which are only 21 miles in width, these authors suggest the probability of a glacial period.

When the fauna of Yezo has been studied, it seems very probable that the distinctions between the larger animals of the two sides of the Tsugaru Straits will be found to be much more marked than it is at present. For instance, it does not seem improbable that there may be *two* large bears in Yezo one black and the other brownish red—which are not met with in Nippon, whilst in Nippon we have the racoon-faced dog, moles, and the boar, which are not found in Yezo. These latter statements are made on Japanese authority. The greatest differences, however, will be amongst the animals of tropical origin, as, for instance, the snakes. In Nippon Mr. Pryer tells me that there are no less than 13 species. Although I have paid some six or seven visits to Yezo, I do not remember having seen in that island more than two species. Bats also are scarce in Yezo, whilst in Nippon there are several varieties.

THE FORMATION OF THE TSUGARU STRAITS.

The straits which cause this marked division are at their narrowest point about 10 miles in width. Their depth varies in the central parts from 70 up to 130 fathoms. Judging from the sea terraces upon the sides of these straits, which terraces I may remark are characteristic of the whole of Yezo and also of the Southern Kuriles, [73] it would seem that the last movement of the land has here been relatively to the sea an upward one. The indications of elevation which we have further to the south, as for instance in Yedo Bay,

are well known to us all. Under these circumstances, and also considering the depth of the straits, we can not imagine them to have been formed by subsidence. It would rather appear that they have been formed by the ordinary processes of marine denudation, and Yezo has been separated from the main land just as England has been cut off from France. The manner in which headland faces headland, on the two sides of the Straits of Tsugaru, is another point which I take as an indication of the separation having taken place by marine denudation, these headlands being, so far as I am aware, built up of similar rocks, which therefore have been cut through in a similar manner. The Straits of La Perouse may have been formed in a manner similar to those of Tsugaru, and just as Yezo was cut off from the mainland, if marine denudation continues and Volcano Bay becomes much deeper, Northern Yezo may be cut off from Southern Yezo, and one more channel will be opened to connect the Japan sea with the Pacific Ocean. How long it has taken to form such a channel as the Tsugaru Straits it is difficult to answer correctly. However, by comparison with the rate at which other coast lines have been worn away, it is not difficult to obtain data which will aid us in forming some conception. Thus, for example, we might compare the coast of Japan with that of England. From numerous observations and calculations, the eastern and southern coast of England is being worn away at a very rapid rate. For example, the coast of Yorkshire is cut backwards, as calculated by the late Professor Phillips, at an average rate of $2\frac{1}{2}$ yards per annum. In Norfolk the rate has been from 1 yard to 3 feet 2 inches per annum. The chalk cliff near Ramsgate have on an average lost about 3 feet per annum.

Taking the lowest of these rates at which portions of the coast of England are being worn away, as the rate at which the rolling of the Pacific is cutting into the rocks of Japan, or even taking one-third of this rate, that is one foot per annum, it is a simple calculation to shew that long subsequent to any period which has been assigned for that of Glaciation, there was in every probability a land connection between Nippon, Yezo, Sagalin and the adjoining continent. [74]

During the period that these straits were being cut, it is not un-

likely that other causes may have been actively engaged in compensating for the waste and tending to maintain a land surface.

DIRECTION FROM WHICH JAPAN WAS COLONIZED.

When we look at an atlas and see the Kurile Islands like a row of stepping stones connecting Northern Japan with Kamschatka, it is a very natural supposition to imagine that Japan may have received some—at least some portion—of its present fauna by immigrations from the continent along this line. After two visits to the islands, the first of which was in 1878, when I went as far north as the southern extremity of Kamschatka, I quickly came to the conclusion that it was almost beyond the pale of possibility to imagine Japan to have been colonized from this direction. After passing Urup, all the remaining islands are perpetually capped with snow. With the exception of a fringe of green near the shore-line, they are destitute of vegetation. The general appearance of many of them is that of a huge, black cone of cinders. From the tops of several of these, steam is issuing. Altogether the aspect of these islands is dreary in the extreme. Between neighbouring islands the currents issuing from the Okhots are so rapid, and in consequence meeting with a swell from the Pacific, so rough, that it is a rare occurrence even for the few inhabitants who linger on these islands to cross from one to another. Should they attempt it, they carry with them the whole of their household gods, so that on reaching the opposite shore a new home may be established. The dreariness is increased by the long continuance of dense fogs, not to be surpassed even by those of world-wide fame which characterize Newfoundland. Everything is most unpromising for animal life.

The geological nature of these islands shows them to be of very recent origin—in fact, some of them are still in the process of formation. This being the case, at the time that Japan was colonized, these stepping stones were probably without existence. Had they been used in modern times, convenient as they are, we ought to find upon them some evidences of the animals which have migrated over them. What animals there are, however, upon the Kuriles, so far as I am acquainted with them, seem to show that,

rather than Japan having been colonized from the Kuriles, the Kuriles were colonized from Japan. Thus, in Yezo we find the fox, bear, land otter, deer, wolf, etc. Of these, the fox I believe ranges throughout all the larger of the Kurile Islands. I have seen its skins in the most northern island and also in the two southern islands. The bear and land otter, however, only reach to the second island, Iterup. Possibly they go to Urup, but this is doubtful. The remainder of the larger fauna of Yezo does not even cross over to the first island, although it often happens that the Yezo straits, which are not more than *ten or twelve miles* wide, are nearly bridged over with ice. Occasionally they are quite bridged over, and several of the inhabitants of Nemoro, I am told, have repeatedly crossed to Kuna-shiri on foot.

By a similar argument, I think it could be shown that the islands to the south which form the stepping stones towards Loochoo, are also of too recent an origin to have formed the bridge for the colonization of Japan. The only other route by which Japan could have received its fauna is the island of Sagalin. If we accept this as the bridge connecting Japan with the adjoining continent, we fall in with the conclusions deduced from a study of the fauna by Mr. Wallace. From a geological or geographical point of view, the connection of Japan with the main land through Sagalin will be a matter simpler to understand and more probable than a connection through the Kuriles or Loochoo.

When we look at a chart and see that the straits separating Sagalin from the main land are at one point only 5 miles in breadth, and learn that everywhere they are filled up with extensive banks of sand and mud, which renders them so shallow that at low water they become impassable for ships (see "*Mikado's Empire*," p. 26), we see that even now it is possible for Sagalin to be colonized from the continent.

Between Sagalin and Yezo, however, we have the Straits of La Pérouse, 25 miles in breadth and with a depth of 40 fathoms. These were probably formed at or about the same time as the Tsugaru Straits.

It is sufficient for our purpose to rest with the assurance that prior to the glacial period, and for some time after, the straits of [76]

which I have spoken were probably without existence, and therefore there was a free communication for all animals which desired to migrate throughout Nipon.

CLIMATE OF JAPAN PREVIOUS TO THE GLACIAL PERIOD.

The next point to which I wish to call attention is the fact that before the glacial period there was probably a period when the climate was warmer than it is at present. Of this we have in Europe abundant evidence. In Japan, however, our evidence is as yet but scanty. As an example of such evidence, I will call attention to the beds of clay rocks which are found in Yezo. Those containing ammonites Dr. Naumann assigns to the cretaceous period, because, I presume, the ammonites they contain are similar to the ammonites of the cretaceous period in Europe. From the reptilian remains with which ammonites occur in Europe, it seems tolerably certain that the annual mean temperature of the period when these creatures lived must have been a high one—certainly equal to that of the tropics. Prof. Haughton, arguing from premises like these, assigns an annual mean temperature of 68° F. to the Jurassic period—that is to say, a climate with a temperature equal to that of New Orleans. At the time the ammonite beds were formed in Yezo, we may conclude that the yearly mean temperature was 68° F., or 23° greater than it is at present in the same locality. How long this high temperature period occurred before the glacial period it is difficult to say, but we must remember that the period at which ammonites like the cretaceous ammonites flourished in Yezo was not necessarily the same period at which the cretaceous rocks were formed in Europe. It is by no means impossible that ammonites like the Nautilus may have flourished in the Eastern Hemisphere long after they had become entirely extinct in the Western Hemisphere.

Regarding these rocks from a lithological point of view—and I have ridden along the whole length of their exposure upon the south-eastern coast of Yezo—they are certainly not suggestive of great age.

As a second indication of warm climate previous to the time at [77] which we can imagine a glacial period to have occurred, I will

refer to the discovery made by Mr. Toshiwo Nakano of corals in the rocks which surround the bay of Tōkiō. These corals were identified by Dr. Edward Naumann as reef builders, who, in an article on the "Plain of Yedo" in *Petermann's Geograph: Mittheilungen* (25 Band, 1879. p. 134), thus refers to them:—"In the more recent tertiary period, reef-building corals developed their beauty on the coast of the Awa island, and built up from chalky masses an extensive wall. As reef-building Polypi are at present strange to the Japanese seas, we obtain an estimate of the temperature for the last phases of the most recent geological period. When the reef-forming corals lived on the coast of Awa, the temperature may have been 6° warmer than at present."

In a foot note Dr. Naumann tells us that these corals were found by Mr. Nakano at the foot of a hill about 50 feet above the level of the sea. They are chiefly *Astræidæ* and *Fungidæ* and occur in large masses. In the winter of 1876 I visited the locality which Dr. Naumann here refers to. The corals which I met with occurred irregularly mixed up with shells, siliceous pebbles, etc., in the form of boulders lying on the beach between Tateyama and Shiwomi. The rock from which these boulders are derived is met with a short distance back inland. From its position it appears to be a member of the stratified tertiary tuffs which are so extensively developed on nearly all sides of Yedo Bay. As these tuffs are well defined stratified rocks, in places buried under 100 feet or so of more or less stratified gravels and alluvium, I should certainly regard them as having been formed prior to any glacial period.

Our evidence respecting the nature of the climate before the time at which we can suppose a glacial climate to have occurred then is: first, at some time previous to such a period the mean annual temperature of Northern Japan was much greater, perhaps 23° F., than it is at present; and second, that this high temperature probably decreased until at a period immediately before glacial times it was only about 6° warmer than it is at present.

The analogy between the changes of climate which took place in Europe previous to the glacial period, and the changes which took place in Japan at about a corresponding time may, I think, be [78]

taken as a further proof that Japan passed through a cycle of climatic conditions similar to those of European countries.

A SUGGESTION OF THE CONDITIONS WHICH ATTENDED THE
GLACIAL PERIOD AS EXPERIENCED IN JAPAN.

The point which we have now reached in our argument is that previous to the time of the glacial period the Northern Islands of Japan were united with each other and also with the main land. Under these conditions the whole of Japan from north to south was in every probability covered with a more or less tropical flora and fauna.

We have also shown, that just as in the Western Hemisphere, there was a glacial period, there was no reason why a similar period should not have happened in Japan.

To continue, let us imagine such an occurrence to have taken place. As the cold increased and the mountains became covered with snow, there would be a gradual retreat of species towards the south. Those upon the main land would have an interrupted course before them, but those upon the *peninsula* of Japan would find themselves suddenly arrested. Being arrested, they would then have to struggle with the climate. In this struggle some would become extinct, whilst a few of the more hardy, or those which were the most pliable would gradually accommodate themselves to the new conditions. These would survive, but probably in an altered form.

Living between these tropical forms and the barrier, we should have many palæarctic forms. Subsequent to this period, or even perhaps before the climate had ameliorated to its present conditions, the cutting of the Tsugaru Straits was completed. This was probably followed by the cutting of the La Pérouse Straits, whilst the straits between Sagalin and the main land can hardly as yet be said to have had their severance properly completed.

Before the continuity of the land was interrupted, certain of the animals which had been driven southwards migrated back towards the north; others, however, owing to the climate not having sufficiently ameliorated, or to causes which it is not for us to enter on,

lingered behind until the formation of the straits had been completed [79] and they were then cut off. In this way, perhaps, we may have obtained some of the peculiarities observable in the present geographical distribution of the Japanese Fauna and Flora. At the time of the cold period the icy barrier from the north may not have descended beyond the same latitudes which it reached in the Western Hemisphere, say to 55 N. Lat.,—that is not farther south than the middle of Kamschatka. This would bring the outer edge of the Arctic pack ice about 700 miles farther south than it is at present, or to within 1200 or 1500 miles of the latitude of Tōkiō.

At the present time, in the longitude of Great Britain, icebergs and drift ice have a limit at about 65 N. Lat. In the North Pacific the limit is about 55 N. Lat. If at the time of the glacial period drift ice extended as far south as the latitude of London (52 N. Lat.), as it might have done from the evidence of scattered boulders, it would be 13° lower than at present. If the descent of the drift ice in the Pacific was proportional to that in the Atlantic, pieces of it might now and then have reached latitudes as far south as Hakodate (42 N. Lat.), that is to within 500 miles of Tōkiō. The same causes which produced this increase in the Arctic ice would increase the snow fields upon the mountains, cause glaciers to exist, and make the winters more rigorous. By making the assumption of these glacial conditions in Japan, which in other words is assuming that Japan has passed through vicissitudes similar to those of other countries in northern latitudes, we have the means of explaining many of the peculiarities we observe in the distribution of the flora and the fauna—and therefore I am inclined to accept the phenomena presented in the distribution of the fauna and the flora of Japan as evidence of a glacial period.

EVIDENCE OF THE ABOVE CONDITIONS AS AFFORDED BY FOSSILS.

It might now be asked whether we have any direct evidence of the period we have spoken of? If, for instance, southern types of animals became extinct in Japan, traces of these animals may possibly be found? Or again, might we not find evidence of the cold amongst the beds of recent shells, etc.? Evidence of this

[80] description is but scanty, but as archæological researches are continued, no doubt it will be generally increased. As an indication of a southern animal which has become extinct, we may quote the discovery of the fragment of "the right lower jaw of what may prove to be a large baboon-like ape," by Professor Morse in the shell mounds of Ōmori. Professor Morse, remarking upon this, says: "It may possible be *Cynopithecus*, a species of which is found in the Philippine Islands and Celebes." As another illustration indicating a warmer climate in Japan, I may mention the remains of elephants found in the alluvial deposits of Japan and recently described by Dr. Ed. Naumann. Dr. Naumann tells me that with one exception—a tooth of *Elephas primigenius* which is said to have been found in Japan—they are all Indian species.

Dr. David Brauns, writing to me on the fossils found in the surface deposits, says: "I consider the coëxistence of *Elephas meridionalis* and *Elephas antiquus* to be proved in the diluvial deposits of Central Japan. The former—a jaw with teeth—was found in 1868 at Yokohama and brought to Paris by Savatier." The above notes, together with others, will shortly be published by Dr. Brauns in a paper entitled "Geology of the Environs of Tōkiō."

As an indication of climatic conditions which were colder than the present one, we may quote a result obtained by Dr. Hilgendorf from the examination of the recent shells occurring in the beds of alluvium at Shinagawa, viz., that they are characterized by some forms which are now solely found in the north of Japan. As an example of such shells we may cite *Pecten Yessoensis* which, although tolerably abundant in the Shinagawa deposits, is now confined to the surroundings of Yezo.

In the deposits which are still more recent than those at Shinagawa, we also appear to have indications of a change in fauna which may perhaps be partly referable to a change in climate. I refer to the fauna of the shell mounds which have been so ably investigated by Professor Morse. Professor Morse, speaking of the great changes which he clearly shows to have taken place in the molluscan fauna of Yedo Bay since the formation of the

Ōnori deposits, remarks that "the extinction of certain forms within a comparatively recent time might be accounted for in considering the upheaval of the water basin, and the consequent narrowing of the bay and shoaling of the waters, but the profound changes which have taken place in the size and contour of certain species demands time." I myself have suggested that the silting up of the waters of the bay and the gradual change which for the last 800 years has been coming over the purity of the waters, may perhaps be in some way connected with these alterations. May we not also ask ourselves whether they do not indicate to us changes in the climate? [81]

Looking over Professor Morse's results, we observe that two of the shells, *Area granosa* and *Turbo granulatus*, the former of which is exceedingly common in the mounds and also in the beds passed through in sinking wells, appear to have retreated southwards. Supposing this migration to be due to a lowering in the temperature in the water of Yedo Bay, how far such a supposition will agree with the other changes which have been observed by Professor Morse is a matter to be decided by naturalists. I must here remark that I have only suggested a change in climate as one of the many means which might bring about a migration. We have records of the sudden migration of a shell within a period of a few years, the reason for which appears to be inexplicable.

DIRECT EVIDENCE OF GLACIATION.

I will now turn to what I call the direct evidence bearing on a glacial period. This evidence consists of rounded rocks, apparently *roches moutonnées*, on the sides of a mountain in the northern part of Nipon, called Gwassan. As this evidence is amongst the most important which I have to bring forward, and also as Gwassan is for several reasons an interesting mountain in itself, I will describe my visit to it in detail.

Gwassan is a large mountain situated at the junction of the *kens* of Yamagata and Akita. If you approach it from the city of Yamagata you first travel over a large alluvial plain bordering the Mogami-gawa. This takes you to Sagaye, a distance of about $4\frac{1}{2}$ *ri*.

From Sagaye you follow the banks of the Sagaye-gawa. On the banks of this river you meet with many exposures of stratified tuffs and clays dipping up the stream at an angle of about 20° . The usual colour of these beds is white and grey, but a few of them are red. At a distance of 8 *ri* from Yamagata you reach a large village called Kaishiwo, and at this point you are fairly in amongst the mountains. One and half *ri* farther brings you by a mountain

[82] path to Iwanezawa, a small village, which is one of the places from which the ascent of Gwassan may be made. The latter part of this road is rather steep, and is over rocks which are similar to those which had been observed at lower levels. It was from this point on July 27th, 1879, in company with Dr. R. Lange, that I made the ascent of Gwassan. After leaving Iwanezawa you make a slight ascent and then descend to cross a small stream running towards the left. From the bed of this stream there is a short ascent which brings you to the top of a ridge along which you walk towards the left for nearly an hour, most of the time gradually ascending. After this you make a sharp descent of about 800 feet to the bed of the Karasu-gawa, a rapid stream running towards the right. Along the ridge from which we descended the rocks appear to be stratified, but somewhat broken and altered by metamorphic action. Similar rocks are met with as boulders in the beds of the Karasu-gawa. Mixed with these there were a few boulders of a porphyritic andesite. Before descending to the river I obtained a good view of Gwassan. In general form it might be described as a huge green hummock. Near its summit it was covered with many patches of snow. Neither its shape nor the rocks which were met with upon its flanks seemed to shew that it was of recent volcanic origin. Up to the bed of the Karasu-gawa our guide reckoned that we had travelled a distance of 3 *ri*, and to reach the top of the mountain—the base of the steep portion we had fairly reached—we were told that we had 2 more *ri*. We reached this $6\frac{1}{2}$ hours after starting. The height of the mountain I estimated at about 600 feet; on the top it is undulating and its sides are scooped out into shallow valleys, which are apparently perpetually filled with snow. These patches of snow varied in length from about half a mile to one mile. At

the bottom of one of these valleys the ground was hummocked and its contours looked as though they might have been produced by glacial action.

Cropping up through the grass which covers the top of the mountain, there were many boulders of a much decomposed andesite. On the top of the mountain there is a small temple and a number of huts for pilgrims. From here we descended the opposite side to the village of Hagita, a distance of about 9 *ri*. This we reached at night, after 14 hours of continuous walking. A great portion of the descent was down a very clayey road, along which no exposures of rock were visible. At the bottom of the steep portion of the [83] mountain, upon the left land side of the road, there is a small tract of gently sloping country with a very singular appearance. This stretches in the direction of the town of Sakata. The peculiarity of this country lies in its contour, which is that of a series of waves or hummocks, the average height of which may perhaps be 20 feet. The steep slopes of these in many cases were observed to point towards Gwassan.

At the time I saw these undulations they were thickly covered with grass, and from this and also from the soil on which the grass grew, it was impossible for me to determine the nature of the rocks which lie beneath them. Their appearance was certainly very suggestive of glacial action, and not unlike the hummock districts we meet with in Labrador and Newfoundland.

As to whether these rounded rocks which exist upon Gwassan—which it will be observed is one of those mountains on which glacial action might be found—are really the results of ice work, I am not prepared to make any definite statement. The appearances are, however, sufficiently well marked that they should be carefully examined, and the attention of travellers drawn in search of similar marks to the valleys of the high mountains of Western Japan. Mr. Gowland, writing to me on the subject of glaciation in Japan, remarks that "in none of the mountain districts which I have visited here have I ever seen *sure* evidences of glacial action." I myself am in the same position, but the indications which I have met with are certainly strong enough to demand a close investigation.

CONCLUSION.

The line of argument which I have followed, whilst endeavouring to show that there are traces of the glacial period in Japan, has been briefly as follows:—

[84] First, because we find so many evidences of ancient glaciation in countries lying in the same latitude as, and to the south of, Japan, it would, on the assumption that any of the present accepted theories which are given as an explanation for the glacial period are true ones, be contrary to reason to suppose that Japan altogether escaped the effects of the glacial period. Next, it is shewn that Japan is admirably well situated to experience a change in climate by a slight variation in the direction or strength of the ocean currents which wash its shores, or by an alteration in the winds which sweep across its mountains. The districts in Japan where small glaciers still exist were next spoken about, and the districts where we should be most likely to find traces of glacial action were pointed out. After this the terrace formations of northern Japan have been referred to as possible evidences of a change of climate. If terraces were formed by the drawing off of waters to the poles, the height of the terraces which lie in northern latitudes ought to be greater than those farther to the south, and this is shewn to be the case for Japan. Also, the average height of sea-terraces on the two sides of an open sea at places in the same latitude ought to be of the same height. If certain peculiarities in the distribution of fauna and flora in Europe can be explained on the supposition of a glacial period, similar peculiarities, as observed in Japan may possibly be taken as an indication of somewhat similar conditions in Japan. After this, these peculiarities were pointed out, and it was shewn to be possible, that previous to a time at which we can suppose a glacial period to have taken place, the Tsugaru Straits and those of La Pérouse had not been formed, and also it was shewn that from fossil remains the climate of Japan was tropical. These being the conditions, the main island of Japan received a tropical fauna and flora, coming from the north. As the climate became colder the territory of these first emigrants was invaded by others coming from the north, and all, excepting the more hardy of the first

comers, gradually died out. Conditions like these explained the curious mixture of semitropical and palæarctic species which are now found in Japan. As evidences of the extinction of tropical forms and also of a climate colder than the present, certain fossils of the alluvial deposits were referred to. The most important evidences of cold conditions are markings on Gwassan, a mountain in north Japan, which seem to shew that its present snow fields once extended further down its sides, but instead of being in the form of snow, were in the form of glaciers. These markings however, yet need to be closely examined.

By a glacial period in Japan it is not meant what is meant by a glacial period in Northern Europe. We must not, for instance, [85] suppose that any portion of the country was shrouded by ice, or even that the cold was sufficiently intense to bridge across the Tsugaru Straits. What we can imagine, however, without any violation of reason, is that at the time of the glacial period in Europe, there was a climate in Japan not unlike that which at the time of the glacial period probably prevailed in a country like northern Spain. The winters were longer than they are at present and also more severe. On some mountains which previously had been destitute of snow, beds of this material accumulated. Where glaciers had previously existed, these became enlarged and descended farther down the mountain flanks on which they rested. And generally, the country was colder than it is at present, but it was by no means uninhabitable.

I will now conclude. What I have said has to a great extent been a matter of speculation, but still I hope it has not been speculation without reason. To the speculations I have appended certain facts which appear to support the notion that once Japan, like other northern countries, has been subjected to a climate colder than the present one. As time continues, facts will gradually be accumulated, and in a few years more I hope their number and their nature may be sufficient to fairly establish the ideas which have been here enunciated.

DISCUSSION.

Dr. Brauns said the paper fell rather short of giving evidence of a glacial period in Japan. It would have involved such a lowering of temperature that a sheet of inland ice must have existed, which the author had found not to be the case. All the instances of animals and plants which had been mentioned to prove the presence of a state of low temperature might be matched by others which would equally prove the contrary. In fact, arguments from flora and fauna were always rather hypothetical. He considered that the evidence brought forward in Mr. Milne's valuable paper tended rather to show that there had been no glacial period in Japan.

[86] Professor Milne replied that he quite agreed with Dr. Brauns. His own conclusion was, that although there were evidences that the temperature had once been lower than it is now, there was no conclusive evidence of a glacial period, properly speaking.

Dr. Faulds said that Professor Milne seemed to have expressed himself cautiously. The evidence derived from the vertical distribution of the mountain flora was often very dubious. Even within the same area of distribution, varieties of moths and butterflies of the same species might be notably limited to the narrowest patches of a particular soil, the subtle colour or food relations of which had perhaps helped to develop the variety. Even more readily might plants have their areas of occupancy determined by degrees of temperature, etc., on the simple basis of natural selection without the vast machinery of a glacial age. The speaker had not yet seen any veritable glacial scratchings even on hard rocks in the ranges near Tōkiyō—where, however, appearances were to be observed not very unlike those sometimes attributed to glacial action in Scotland.

No doubt the distribution of the fauna of Japan had not yet been very minutely studied, but known facts were as yet perhaps capable of being explained without the agency of ice. Species had been known to die out of a district utterly in a short time, through such changes in cultivation or population of a country as would involve diminution of special food or increase of special enemies. A curious and suggestive fact had been communicated to him by Japanese friends interested in natural history, viz., that the fox is quite unknown in the island of Shikoku. The author had done well to call attention to the subject, and had contrived to give us an interesting and suggestive paper.

HIDEYOSHI'S INVASION OF KOREA.

CHAPTER II.—THE RETREAT.

BY W. G. ASTON.

[Read January 11, 1881.]

It was on the 6th day of the 1st month of the Chinese year corresponding to A.D. 1593 that the Chinese army advanced against Pingshang. The Japanese garrison had little time for preparations of defence. It was too late for them to call to their assistance their countrymen stationed in the surrounding district, but they made a skilful use of the means at their command, strengthening their position by constructing palisades and throwing up breastworks loopholed for musketry. The attack was maintained for two days. Both sides fought with great determination, but the Chinese were far superior in numbers,* and the Japanese were at last forced back within the citadel, having sustained a loss of about sixteen hundred men. The Chinese general was too discreet to drive a beaten enemy to make a desperate resistance. He remembered the proverb, "When the rat is hard pressed, and cannot escape, it has been known to [88] overthrow the cat," and on the evening of the second day's fight he

* The Japanese writers talk of 200,000 Chinese, but the Korean historian of the war, who was a high official of his government, and must have been well informed, gives the more sober estimate of 40,000. It should be remembered, however, that there was a large auxiliary force of Koreans, whose numbers are nowhere stated.

withdrew his army without the walls of Pingshang, purposely leaving one side unguarded. During the night, the Japanese crossed the river on the ice, and a few forced marches placed them beyond all immediate danger of pursuit. Indeed, there was little disposition shown to follow them closely. Weary, foot-sore, and starving from cold and hunger, they pursued their way southward unmolested. Ri Joshô made no attempt to follow them, and notwithstanding that the Korean generals who occupied positions near the Japanese line of march were strongly urged to cut off their retreat, none was found bold enough to attack the dreaded invaders even in their present well-nigh desperate condition. They had, however, the satisfaction of capturing and beheading some sixty unfortunate stragglers who, from sickness or fatigue, were unable to keep up with the rest of the army.

The fall of Pingshang was the turning point in the Japanese invasion of Korea. If the Chinese and Koreans had followed up their victory with greater energy, the consequences to the Japanese would have been utterly disastrous, but even as it was they were sufficiently grave. It became necessary for them to evacuate the whole province of Hwanhaido (黃海道), where they had numerous garrisons, and to concentrate their forces at some point further south. In the depth of winter, and in a country desolated by the war, this operation was accompanied by great hardships. It was at first intended to make a stand at Kaishung, but for strategical reasons this plan was abandoned, and the capital itself selected as the rendezvous for all the Japanese troops stationed to the north of this city. Among the generals whose position was rendered untenable by the reverse at Pingshang was Kiyomasa, who, along with Nabeshima, held the north-eastern province of Haukiûngdo. Several castles in the south-eastern province which were garrisoned by his men had been attacked by the newly raised Korean levies, which was another reason for Kiyomasa to abandon his position in the north. He marched direct to their assistance, but was too late to prevent a disaster which rendered the situation of the Japanese in Korea still more precarious than before. The Koreans, who had flocked in numbers to the standard of a new and

popular general, had already succeeded in capturing several of the most important strongholds* in this province, and as this was the first success of any consequence which the land forces of the Koreans had achieved, its moral effect was of no small importance. They even ventured to intercept Kiyomasa himself on his march southward, but he cut his way through, and effected a junction with Konishi at Hanshiung. [89]

After some delay, caused by the want of supplies, the badness of the roads and Ri Joshō's disposition to magnify these difficulties, the Chinese army, with their Korean auxiliaries, at length moved southwards, and on the 24th day of the 1st month arrived at Pachiung (坡州), one day's march from the capital, where on the same day a council of war was being held by the Japanese commanders. Most were in favour of retreating to Fusan, but Kiyomasa and a few other bold spirits could not bear to relinquish without a struggle the fruits of their victories, and it was ultimately resolved to make a stand and give battle to the Chinese. Fearing that, when they were engaged with the enemy without the walls, there might be an outbreak among the remnant of a native population which still inhabited the capital, the Japanese had recourse to a cruel measure, which was only too characteristic of the warfare of the age. They massacred all the Korean towns-people except a few who were useful to them as porters and as camp-followers, and destroyed by fire all that remained of the city.

Near Pachiung, the Chinese and Japanese met for the first time in the field. A bloody skirmish, in which a party of Chinese

* The following incident, which occurred at one of these sieges, shows that bomb-shells were used in this war by the Koreans. "A man called Ri Chō-son invented a cannon called *Shin-teu rai* or Heaven-shaking-thunder, which by his art he secretly brought to the foot of the castle. It was put in operation and shot into the castle, where it fell in the courtyard. The Japanese troops were ignorant of its construction, and rushed forward to see what curious missile had been shot at them by the enemy, when all of a sudden the gunpowder poison burst forth, with a noise which made heaven and earth to tremble, and it broke up into splinters of iron, which caused instant death to any one whom they struck. More than thirty men were killed in this way, and even those who were not hit were flung to the ground."

and Koreans had the advantage, had encouraged Ri Joshô to assume the offensive. He advanced with a considerable force towards the capital, a little distance to the north of which he was encountered [90] by a division of the Japanese army. In the engagement which followed, the Chinese were repulsed with great loss, the success of the Japanese being due partly to their superior tactics, and partly to their weapon, the famous *katana*, which to us needs no description. The Korean historian of the war informs us that in this battle "the Chinese had no firearms—only short blunt swords. The Japanese, on the other hand, were foot-soldiers, armed with swords three or four feet long. With these they stabbed and slashed, so that none could stand before them." Many of Ri Joshô's personal followers were slain in this engagement, and he was himself so much discouraged that he at once withdrew to Tongpa (東坡) and from thence to Kaishûng. In his despatches to his government he reported that the Japanese were 200,000 strong, and requested that a successor might be appointed to him, as he was in weak health, and could not longer endure the hardships of the campaign. At Kaishûng, a rumour reached him that Kiyomasa was on the march from the province of Hankiungdo to attack the city of Pingshang. He was glad to have so good an excuse for increasing his distance from the Japanese, and fell back on Pingshang, leaving a few hundred men to occupy Kaishûng.

Our historian, Riu, was at this time charged with the thankless office of conducting the relations of his government with the Chinese. It was his business to superintend the supply of provisions, and he also felt it his duty to urge their generals to a more active prosecution of the war. Any short-coming in the matter of supplies,—any remonstrance against inactivity or cowardice, exposed him to insult and ill-usage, and on more than one occasion he narrowly escaped with his life. He had not even the satisfaction of knowing that he was doing his country good service. The food obtained with great difficulty for the Chinese army was wrung from his starving countrymen, while the invaders seemed as far from being expelled as ever. Korea was indeed in a pitiable condition. Weighed down by the burden of maintaining two foreign armies, of which the ally was

scarcely less oppressive than the enemy, the population were reduced to the greatest straits for subsistence. Many thousands died of famine, and Riu's lodgings were besieged by crowds of famishing wretches, to whom he doled out a mixture of one part of rice-flour with ten parts of a powder made by pounding down the leaves of the fir.

With the country in this exhausted condition, and with the roads [91] rendered impassable by the winter rains, military operations had become well-nigh impracticable, and the Chinese and Japanese armies remained for a time inactive. The position of the latter, however, became daily more untenable, as the country became more destitute of resources, and the Korean irregular troops, who swarmed on all sides of them, became daily bolder, until at last the Japanese had to content themselves with what store of provisions they had laid up within the city, not venturing to send out forage parties into the surrounding country. Disease was rife in both armies, and large numbers of the horses of both camps were carried off by an epidemic.

Both Chinese and Japanese were now anxious for peace. One of the Japanese generals having intimated a desire to come to terms, Ikei, notwithstanding his previous treachery, had the courage to venture once more into the Japanese camp, and to recommence the work of negotiation. Among the points discussed on this occasion are said to have been the following: Peace between China and Japan;—recognition or investiture of Hideyoshi as King (王) of Japan;—cession of Korean territory to Japan;—tribute payable by Korea to Japan. There was also talk of a Chinese princess being given in marriage to the Kōtei, *i.e.*, the Mikado, of Japan. We have little means of judging how far these proposals were seriously considered. The points mainly insisted on by Ikei were the surrender of the captive Korean princes and high officials, and the withdrawal of the Japanese to Fusankai, which was to be accompanied by the simultaneous retirement of the Chinese army from Korea. But there were serious obstacles to the success of these negotiations. Kiyomasa was unwilling to give up his prisoners without express authority from Hideyoshi, and Riu, burning with revenge for his country's wrongs which no hardship and no humiliation could quench, steadily urged Ri Joshō to make no terms with the brigands from

Japan. Nor had either party the least confidence in the good faith of the other—a difficulty which Ikei was not exactly the man best fitted to remove. He was accordingly recalled, and other envoys were sent in his place, but they had little better success. The only tangible result of the negotiation was the stipulation by the Japanese to evacuate the capital on the 19th day of the 4th month, and this they would probably have soon been compelled to [92] do in any case. The Chinese army entered the city on the following day. They had been gradually drawing nearer during the progress of the negotiations.

There was probably also some understanding in the nature of an armistice between the Chinese and Japanese, for we find that the latter, in spite of Riu's remonstrances, were allowed to retire peaceably to the neighbourhood of Fusankai, where they entrenched themselves in fortified camps, and that they were accompanied by Ikei and his colleagues, who were on their way to Nagoya (now Karatsu) where Hideyoshi was then staying. The Chinese army followed the Japanese some weeks later, and took up their quarters at Kioshō (昌居) and other places in the same vicinity.

The Chinese ambassadors arrived at Nagoya on the 23rd day of the 5th month, and were received by Hideyoshi in the most friendly and magnificent manner. During their stay, which lasted till the beginning of the 7th month, the chief nobles of his court vied with each other in their attentions to the strangers. Every day saw some fresh entertainment in their honour. Hideyoshi set the example himself by inviting them to a banquet as soon as they arrived when the ceremony of exchanging wine-cups—the neglect of which was complained of by the Korean envoys—was not forgotten. Presents of silk stuffs, robes, money and swords were lavished on them. They were greatly delighted with the scenery of the neighbourhood (to the beauty of which the present writer can bear personal witness)—with its winding inlets and wooded bluffs rising steeply from the water's edge, and they composed verses in its praise which have been preserved to us in the Japanese histories. To add to their enjoyment, Hideyoshi entertained them with a *fête*, of which the principal feature was a procession of boats, a minute description of

which has been handed down to us. "Several hundred barges, with the ensigns and pennons of the various *dainiōs* waving to the breeze, rowed past in order over the surface of the sea. The chief boatmen and their mates chanted a song as they plied their oars, and the loud voices of the crews, numbering many hundreds, echoing far over the sea, arose to the clouds and mingled harmoniously with the sound of the breaking billows. Hideyoshi shared the same barge with the ambassadors. It was adorned with the utmost elegance and splendour. Two hundred lances with tiger-tail sheaths and tens of [93] halberds inlaid with gold were set up on the bows. Three hundred foot-soldiers, all clad alike in scarlet jackets, formed a guard of honour. *Sake* was served, and the pleasure of the day was enhanced by the presence of singers of the two famous schools of Kwanze and Komparu."

It has been stated that a Treaty of Peace was concluded on this occasion, but an apparently authentic account of the interview at which Hideyoshi discussed political matters with the Chinese envoys, shows that no definite terms of peace were made. Both parties exchanged the most friendly assurances, and agreed to throw the blame of all that had happened on the Koreans, who, as usual, were kept in the dark about everything which passed. This embassy had, however, one important result. Hideyoshi, as an earnest of his willingness to make peace with China, consented to release the Korean princes and grandees who had been made captive by Kiyomasa, and Ikei returned to Korea in advance of his colleagues, bearing instructions that they should be given up. That nothing more was intended by this friendly measure is shown by the fact that almost simultaneously the Japanese army, by Hideyoshi's orders, advanced against Chinchiu (晋州), a castle about fifty miles west of Fusan, which they had already made an unsuccessful attempt to take. The Koreans assembled a large force at a town east of Chinchiu and endeavoured to check the advance of the Japanese, but, to use the words of one of their generals, they were more like a flock of birds than an army, and offered but a feeble resistance. They were defeated with great slaughter, and the Japanese immediately afterwards invested the castle. At this siege Kiyomasa is said to have used

a testudo made of ox hides stretched on a framework, which was pushed forward on wheels to the base of the castle wall. Under its protection, the corner stones were removed by crow-bars, and the wall fell, leaving a breach by which the Japanese effected an entrance. The Korean losses here and at the battle which had just been fought amounted, according to Riu, to 60,000 men, the greatest which they had suffered since the war began. This was the last fighting of what has been called the first invasion. The Japanese levelled the castle with the ground, and then returned to their former quarters in Fusan and its neighbourhood, where they awaited the result of the negotiations with China.

ANALYSES OF TEN JAPANESE MINERAL SPRING WATERS. [94]

BY DR. A. J. C. GEERTS.

[Read January 11, 1881.]

The following analyses of not yet analyzed mineral springs have been made at the Yokohama Laboratory. They comprise

Seven mineral springs of the province of Sagami.

One	do.	do.	Tōtōmi.
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One	do.	do.	Bungo.
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One	do.	do.	Ise.
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Two of the seven Sagami springs have the peculiar character of solfatara-springs of fumarole waters, the five others being all of the same class of alkaline, chalybeate mineral springs.

The springs of Tōtōmi, Bungo and Ise are all strong muriatic, alkaline, chalybeate waters.

No. 1.—TSURU-NO-ON-SEN, *situated at the village of HARAMURA, district of NISHI-TAMA-GŌRI, province of SAGAMI (KANAGAWA KEN).*

A HOT, ALKALINE, CHALYBEATE SPRING, WITH A TOLERABLY LARGE
AMOUNT OF SULPHURETTED HYDROGEN.

The gases (sulphuretted hydrogen and carbonic acid) have not been estimated, as the water was sent to the Laboratory in bottles not

sufficiently closed, and I have not as yet had any opportunity of making this estimation (as it ought to be done) on the spot.

[95]

Physical Character of the Water.

The water is clear and colourless, with a strongly sulphurous and disagreeable smell, and with a slightly alkaline and sulphurous taste. Reaction on litmus slightly acid, but after boiling alkaline.

Gases in the Water.

Sulphuretted hydrogen	... ..	Rather much.
Carbonic acid	... ..	Tolerably much.
Total amount of fixed matter in one litre or		
1000 C.C. of water	... ..	0.1739 grammes.

Grammes in one litre.

Chloride of sodium	... ..	0.0820
" " potassium	... ..	0.0012
" " magnesium	... ..	0.0093
Sulphate of soda	... ..	0.0205
" " lime	... ..	0.0083

Present as Bicarbonates:

Carbonate of soda	... ..	0.0362
" " lime	... ..	0.0013
" " iron	... ..	0.0056
Silicic acid	... ..	0.0081
Total	... ..	0.1134

No. 2.—COLD SPRING of the village of MINAMI-KOSAGI-MURA, district of NISHI-TAMA-GŌRI, province of SAGAMI (KANAGAWA KEN).

A COLD, ALKALINE, CHALYBEATE SPRING, WITH TRACES OF SULPHURETTED HYDROGEN.

Physical Character of the Water.

The water is clear and colourless, with a very slight smell of sulphuretted hydrogen and with a slightly alkaline, not agreeable

taste. The reaction is slightly acid, but after boiling the water it becomes alkaline.

Gases in the Water.

[96]

Sulphuretted hydrogen	... ..	Trace only.
Carbonic acid	... ..	Tolerably much.
Total amount of fixed matter in one litre or		
1000 C.C. of water...	... ..	0.6230 grammes.

Grammes in one litre.

Chloride of sodium	... ..	0.1163
“ “ potassium	... ..	0.0012
“ “ magnesium	... ..	0.0123
Sulphate of soda	... ..	0.0311
“ “ lime	... ..	0.0124
Present as Bicarbonates:		
Carbonate of soda	... ..	0.3018
“ “ iron...	... ..	0.0513
Silicic acid...	... ..	0.0964
Total ... ..	... ..	0.6228

No. 3.—TAMA-NO-YU, situated at the village of AJIRO-MURA YUBA-YEKI, district of NISHI-TAMA-GORI, province of SAGAMI (KANAGAWA KEN.)

A COLD AND WEAK ALKALINE, CHALYBEATE SPRING.

Physical Character of the Water.

The water is nearly clear and colourless, without any smell and with a good, not astringent, taste. The reaction is slightly acid, but after boiling, alkaline.

Gases in the Water.

Carbonic acid	... ..	Tolerably much.
Total amount of fixed matter in one litre or		
1000 C.C. of water	... ..	0.2480 grammes.

	<i>Grammes in one litre.</i>						
[97] Chloride of sodium	0.0225						
“ “ potassium	0.0018						
“ “ magnesium	0.0061						
Sulphate of soda	0.0261						
“ “ lime	0.0435						
Present as Bicarbonates:							
Carbonate of Soda	0.1241						
“ “ iron	0.0099						
Silicic acid... ..	0.0053						
Phosphoric acid... ..	0.0008						
Total... ..	0.2396						

No. 4.—COLD SPRING OF HOKOJI, *of the village of HIRAGI-MURA, district of NISHI-TAMAGÖRI, province of SAGAMI (KANAGAWA KEN).*

A COLD AND WEAK ALKALINE, CHALYBEATE SPRING, WITH TRACES OF SULPHURETTED HYDROGEN.

Physical Character of the Water.

The water is clear and colourless, with a slight sulphurous smell and with a slightly alkaline, but not disagreeable taste. Reaction of the water neutral, but after boiling, alkaline.

Gases in the Water.

Carbonic acid Rather much.
 Sulphuretted hydrogen Trace.
 Total amount of fixed matter in one litre or
 1000 C.C. of water 0.1948 grammes.

Grammes in one litre..

Chloride of sodium 0.0431
 “ “ potassium None.
 “ “ magnesium 0.0046

Sulphate of soda	...	...	...	...	...	...	...	0.0123	[98]
" " lime	...	...	...	...	...	...	...	0.0034	
Present as Bicarbonates:									
Carbonate of soda	...	...	...	...	...	...	...	0.1082	
" " iron	...	...	...	...	...	...	...	0.0154	
Silicic acid...	...	...	...	...	...	...	...	0.0075	
Phosphoric acid...	...	...	...	...	...	...	...	Trace.	
Oxide of manganese...	...	...	...	...	...	...	...	Trace.	
Organic matter...	...	...	...	...	...	...	...	Trace.	
Total...	...	...	...	...	...	...	...	0.1945	

No. 5.—KAME-NO-YU, situated at the village of NAGA-FUCHI-MURA, district of NISHI-TAMA-GŌRI, province of SAGAMI (KANAGAWA KEN).

A COLD AND WEAK ALKALINE, CHALYBEATE SPRING.

Physical Character of the Water.

The water shows a slight whitish turbidity and a slightly whitish colour. There is no smell perceptible. The taste is good,—not disagreeable. The reaction is neutral, but after boiling, alkaline.

Gases in the Water.

Carbonic acid Tolerably much.
Total amount of fixed matter in one litre or
1000 C.C. of water 0.1547 grammes.

Grammes in one litre.

Chloride of sodium 0.0237
" " potassium None.
" " magnesium 0.0041
Sulphate of soda. 0.0102

[99] Present as Bicarbonates:

Carbonate of soda...	...	...	...	...	0.1081
" " iron...	...	...	...	...	0.0085
Silicic acid	...	...	...	...	0.0027
Phosphoric acid	...	...	...	...	Trace.
Organic matter...	...	...	...	...	Trace.
Total	...	...	...	...	0.1573

These five mineral waters are weak chalybeate springs, varying from 0.1547 to 0.6230 grammes of fixed matter and 0.0056 to 0.0513 grammes carbonate of iron in one litre.

No. 6.—SENGOKU-NO-ON-SEN, *situated near the village of SENGOKU-HARA, district of ASHIGARA-GŪRI, province of SAGAMI, KANAGAWA KEN (at the foot of the mountain where the solfataras called "O-ji-goku" are found).*

A HOT, CHALYBEATE, SLIGHTLY SULPHUROUS SPRING, CONTAINING
BORACIC ACID.

The water is brought from the solfataras to the bathing place by means of a roughly-made wooden aqueduct. The bathing house itself is rather badly arranged, and only used by poor people.

Physical Character of the Water.

The water is not clear, but possesses a whitish turbidity, caused by small particles of condensed sulphur. The smell is slightly sulphurous. The taste is also sulphurous,—not agreeable. The reaction is slightly acid and remains acid after the water is boiled, showing that the acidity is not caused by carbonic acid, but by a fixed acid (sulphuric and free boracic acid).

Gases in the Water.

Carbonic acid	...	...	...	...	...	Little.
Sulphuretted hydrogen	...	...	...	...	...	Trace.

Vapour of sulphur Tolerably much. [100]

Total amount of fixed matter in one litre or

1000 C.C. of water 0.8762 grammes.

	<i>Grammes in one litre.</i>
Chloride of sodium	0.0876
“ “ potassium	0.0009
“ “ magnesium	0.0043
Sulphate of soda	0.1825
“ “ iron	0.0243
“ “ lime	0.2771
“ “ alumina	0.0158
Silicic acid	0.0639
Sulphur (free, suspended sulphur)... ..	0.0031
Boracic acid	0.0498
Organic matter... ..	0.1331
Phosphoric acid	0.0013
Free sulphuric acid... ..	Trace.
Total	0.7437

The water was taken at the end of the wooden pipes near the bathing place,—not at the spot on the mountain where it comes out of the ground of the solfatara.

No. 7.—UBAGO-NO-ON-SEN, *at the village of UBAGO, near HAKONE LAKE, province of SAGAMI.*

A HOT, STRONGLY CHALYBEATE AND SULPHUROUS SPRING, CONTAINING A CONSIDERABLE AMOUNT OF BORACIC ACID AND OF AN ORGANIC SULPHUR COMPOUND (BARÈ GINE).

Physical Character of the Water.

This interesting spring is found at the solfataras of Ubago, at a short distance from the fumaroles of Ō-ji-goku, which produce the water of the Sengoku-hara bathing place. The Ubago water is like the

[101] Sengoku-hara mineral water, a product of the boiling sumaroles of this extensive solfatara-ground, and it has, among the Japanese, a certain reputation as a cure for inflammation of the eyes and for various skin diseases.

The water is not clear, but has a reddish turbidity and a slight reddish colour. After being exposed to the air, a gelatinous organic sulphur-compound is separated in films. During the evaporation of the water this gelatinous matter is separated in a considerable quantity; after drying and burning it gives off much sulphurous acid.

The smell of the water is sulphurous; its taste is sulphurous, not agreeable, afterwards slightly astringent on account of the iron it contains. Its reaction is slightly acid and remains acid after boiling. Total amount of fixed matter in one litre of water.....1.3890 grammes.

Gases in the Water.

Sulphuretted hydrogen	...	...	...	...	Trace.
Vapour of sulphur	...	...	...	...	Tolerably much.
Carbonic acid	...	...	...	...	Little.

Grammes in one litre.

Chloride of sodium	...	...	...	...	...	0.0648
“ “ potassium	...	...	...	...	...	0.0021
“ “ magnesium	...	...	...	...	...	0.0075
Sulphate of soda	...	...	...	...	...	0.1983
“ “ iron	...	...	...	...	...	0.0846
“ “ lime	...	...	...	...	...	0.5291
“ “ alumina	...	...	...	...	...	0.0214
Silicic acid...	...	...	...	...	...	0.0510
Sulphur (free suspended)...	...	...	...	...	...	0.0073
Boracic acid	...	...	...	...	...	0.0691
Organic sulphur compound (Baré gine)...	...	...	...	...	...	0.3741
Phosphoric acid	...	...	...	...	...	Trace.
Sulphuric acid (free)	...	...	...	...	...	Trace.
Total	...	...	...	...	...	1.4093

On a former occasion (see p. 295 of the 1st part of my work on Japanese products) I have noted the probability that several

Japanese hot springs, situated at solfatara ground, may prove to contain boracic acid. The examination of two solfatara springs has shown a not inconsiderable amount of this acid in the Ubago and Sengoku springs. [102]

The boracic acid has been estimated after Marignac's method, with double chloride of magnesium and ammonium.

The water at the bathing place at Sengoku-hara has no doubt lost part of its boracic acid by running through the pretty long wooden pipes, in which it is greatly cooled. It is important to examine the boiling water at the solfatara Ō-jigoku itself, which task I hope to fulfil on a future occasion.

Perhaps it will be possible to turn the boiling lagoon of that place to a profitable account, as sources of boracic acid.

The hot spring establishment of Ubago could easily be ameliorated and made more comfortable. At present the discomfort is so great that it is nearly impossible to stay there for even a few days.

This place, as well as Sengoku-no-yu, is visited only by coolies and poor Japanese, who cannot pay the expenses at the better arranged bathing places of Kiga, Miya-no-shita and Yumoto.

The neighbourhood of the lake should however, induce enterprising people to make a good and comfortable bathing establishment at Ubago.

No. 8.—COLD SPRING at FUTA-MATA-MURA, *district of TOYODA-GŌRI, province of TŌTŌMI.*

A COLD AND STRONG MURIATIC, ALKALINE, CHALYBEATE SPRING,
CONTAINING TRACES OF SULPHURETTED HYDROGEN.

Physical Character of the Water.

The appearance of the water is nearly clear, with a slight ferruginous sediment. The colour is yellowish. Its smell is slightly sulphurous and its taste strongly saline and alkaline,—not agreeable. The reaction of the water is alkaline and becomes very strongly alkaline after boiling. Acids produce much effervescence in the water.

[103]

Gases in the Water.

Carbonic acid	...	...	...	...	...	...	...	Very large quantity.
Sulphuretted hydrogen	...	...	...	...	...	...	...	Trace.
Total amount of solid matter in one litre of the water	...	...	...	...	...	...	...	7.022 grammes.

Grammes per litre.

Chloride of sodium	...	...	...	...	...	...	...	2.1791
" " potassium	...	...	...	...	...	...	...	0.0749
" " magnesium	...	...	...	...	...	...	...	0.1110

Present as Bicarbonates:

Carbonate of soda	...	...	...	...	...	...	...	3.1182
" " lime	...	...	...	...	...	...	...	0.9058
" " iron	...	...	...	...	...	...	...	0.0631
Sulphate of lime	...	...	...	...	...	...	...	0.1379
Silicic acid	...	...	...	...	...	...	...	0.4233
Organic matter	...	...	...	...	...	...	...	0.0301
Phosphoric acid	...	...	...	...	...	...	...	Trace.
Total	...	...	...	...	...	...	...	7.0434

No. 9.—COLD SPRING at the village of FUJI-KAWACHI-MURA, district of UMABE-GŌRI, province of BUNGO.

A COLD AND STRONG MURIATIC, ALKALINE, CHALYBEATE SPRING,
CONTAINING SOME SULPHURETTED HYDROGEN.

Physical Character of the Water.

The water is originally very clear and colourless, but soon becomes turbid and reddish, after exposure to the air, with formation of a ferruginous sediment. Its smell is sulphurous, on account of the sulphuretted hydrogen present. Its taste is saline and alkaline, and afterwards slightly astringent,—not agreeable.

The reaction is neutral, but becomes strongly alkaline after boiling. During the evaporation a strong deposit of carbonate of [104] lime and iron hydroxide is formed in the water. Acids cause a strong effervescence in the water.

Gases in the Water.

Carbonic acid Large quantity.
 Sulphuretted hydrogen Little.
 Total amount of fixed matter in one litre of
 water 5.732 grammes.

Grammes per litre.

Chloride of sodium	3.1027
“ “ potassium	0.0262
“ “ magnesium	0.0989
Sulphate of soda	0.0578
Present as Bicarbonates:	
Carbonate of soda... ..	1.2060
“ “ lime... ..	1.0710
“ “ magnesia... ..	0.0451
“ “ iron	0.0688
Silicic acid... ..	0.0540
Total	5.7306

No. 10.—COLD SPRING of the village of Aso, district of TAKAI-GŌRI, province of Ise.

A COLD AND STRONG MURIATIC, ALKALINE, CHALYBEATE SPRING.

Physical Character of the Water.

The appearance of the water is very clear, colourless and fine. When shaken it evolves numerous gas bubbles. Its taste is saline and stimulating,—not disagreeable. It has no peculiar smell. Its reaction is slightly acid (on account of the carbonic acid), but after

being boiled it becomes strongly alkaline, with formation of a yellowish sediment of carbonate of lime and iron hydroxide. Acids cause a strong effervescence of the water.

[105]

Gases in the Water.

Carbonic acid Very large quantity,
Total amount of fixed matter in one litre of
water 4.3392 grammes.

Grammes per litre.

Chloride of sodium	1.7058
“ “ potassium	0.0153
“ “ magnesium	0.1421
Present as Bicarbonates:	
Carbonate of soda... ..	1.4312
“ “ lime... ..	0.8614
“ “ iron... ..	0.0521
Sulphate of lime	0.0281
Silicic acid... ..	0.0431
Bromide of sodium	Trace.
Chloride of lithium... ..	Trace.
Total	4.2792

CONTRIBUTIONS TO THE HISTORY OF THE JAPANESE TRANSCRIPTION OF CHINESE SOUNDS.

BY JOSEPH EDKINS, D.D., PEKING.

[*Read June 29th, 1880.*]

SEC. 1.—EARLY INTERCOURSE OF CHINA AND JAPAN.

Perhaps Mr. Satow's views on the untrustworthiness of the early Japanese chronology are extreme. To ignore all notices of the knowledge of the Chinese language on the part of the Japanese before A.D. 400 is trenchant work.

Let me mention some points from the Chinese side. In the *Heu Han Shu* by Fan ye we are told that on the conquest of Korea by Han Wu Ti, B.C. 110, more than thirty out of the three hundred states into which Japan was then divided had communicated with him. The title of wang 王, with hereditary investitures was used by all these states. The great Wang lived in Yamato. This we must call, if we would follow the old Chinese pronunciation, Yamado 邪馬臺.

This work was composed in the fifth century, in South China, under the Sung. A commentator and prince of the Tang dynasty adds that Yamato was called in his time 邪摩推 Yamat'o. From this I infer that *d* had probably changed to *t* in the time between B.C. 110 and about A.D. 620. This was a change in the Japanese pronunciation. It rests on the statement of Fan ye, who had the use of the court records, as had in their time all the dynastic historians. The form of the expression implies that either in the time of Han Wu Ti or later the Japanese Mikado and his feudal barons took a Chinese title Wang, the

Mikado being distinguished as the great Wang of Japan. The historian does not say whether the Chinese word was used or some native equivalent, such as *kimi*. The word *dai-miyau* is of late introduction.

In the year A.D. 57 the Japanese ambassador is said by the Chinese historian to have styled himself 大夫 *Tai-fu*, and to have said that he belonged to the extreme south of Japan. From this it may be judged that he did not come from the Mikado, but from the ruler of the Satsuma country at that time. The emperor gave him a seal and a sash.

Here we are again in a difficulty to know whether the Japanese then used the title *Tai-fu* or whether it was a translation of some native term.

In A.D. 107 another ambassador came to China with a present from the ruler of Japan of 160 mén. The name of the Mikado given to the Chinese was represented by the characters 帥 *suwei* 升 *shiyau*. This, however, may be the name of the ambassador, his title being *Shwai*, "general."

The next name is that of *Pi me ko*, the princess who reigned with the Chinese title of Empress according to the Japanese annals. The name in the Chinese account is Hime, "princess," with *ko*, "son," appended. The Chinese mistook this title for a proper name, forgetting that the Japanese are as fond of concealing the real name of a ruling sovereign as they themselves are. The Chinese assume that the want of honorific feeling of this kind indicates the absence of true civilization, and they would not wish to believe that the Japanese were civilized. Probably similar reasons have prevented the Japanese from making much use of the early accounts of Japanese embassies contained in old Chinese history. The language is not sufficiently honorific to please Japanese taste. They prefer their own accounts of things, where the Mikado is exalted and other rulers degraded to inferior rank. They content themselves with the remark that these embassies, when they are not mentioned in the Japanese annals, must have been embassies, not from the Mikado, but from inferior persons.

What should our position be in regard to the trustworthiness of these accounts of embassies in the Chinese history? Let us do with them as with those we can investigate more thoroughly. For example, A.D. 166 an embassy arrived in China from the Roman Emperor Marcus

Aurelius Antoninus. The emperor is called An ton 安敦. At this time that emperor was already dead, but we allow a long time to have been occupied by the embassy before arriving by the Cochin-Chinese route, and although the embassy is not mentioned in Roman annals, we accept the Chinese account as historically correct, and should do the same with the Japanese. The Japanese Empress Pi mi hu is called Nü Wang by the Chinese annalists. She is so called in the sense of reigning queen in the Heu han shu and in the Tsin shu. In this last work she is said to have sent an ambassador in the time known as Tai shi A.D. 265 to 275 to the first emperor of the Tsin dynasty. This is mentioned by the Japanese annalist as belonging to the year A.D. 266, and the empress died in A.D. 269. On this occasion an interpreter was employed. The expression 重譯 *chung yi* may mean "interpreting through the medium of two languages." This would imply, perhaps, that the Japanese ambassador brought with him a Korean who knew both languages. It was not the first embassy, for there were embassies in the time of Wen Ti of the Wei dynasty, A.D. 220 to 227. It is mentioned that before the time of Wen Ti the Japanese empress (she held power from A.D. 201 to 269 according to the Japanese chronology) sent an embassy by way of Tai fang in Korea and frequently afterwards. These frequent embassies must have come, then, between the years A.D. 201 and A.D. 220. Under the year A.D. 239 the Wei history mentions that the Japanese queen sent a Tai fu named Nan tu mi to China with others. Arriving at the frontier of China he requested permission to go forward to the capital. The governor of the place sent him in charge of an officer in fulfilment of his request. The next year the same history records that the Wei emperor sent an embassy to Japan, and entrusted a seal and sash to his messengers for the queen. These entries are added in small text in the Japanese account of their empress in the Ni-hon Shiyo-ki. Three years later, A.D. 243, the King of Japan sent a Tai fu called *I sei shiya* and others, in all eight persons, with presents to the Emperor of Northern China.

In the 5th century there were several embassies to the emperors of the Sung dynasty, which ruled south China from A.D. 420 to 479. These would proceed either directly by sea or by way of Korea.

The title *wang*, "king," was employed, but in addition that of

Tsiang Kiün. The Japanese monarch is spoken of as the Tsiang Kiün of Japan, Petsi, Sinra, Mamena, Kara, Ts'in han, Muhan. All these five states were subject to Japan at that time, and they were all a part of the modern Korea. Since the expeditions of Zhin-gou Kuwau-gu, Japan claimed suzerainty over them. The title Shiyau-gun, afterwards conferred on Yoritomo and Tokugaha by the Mikados, was first conferred by the Chinese on the Mikados themselves. In the history of the Sung dynasty we find the Mikados requesting the Chinese emperor to cease using the title An tung Tsiang Kiün (*shiyau-gun*), "The general who pacifies the east," as a designation of the ruler of Japan. The request is granted. A few years later, A.D. 444, another embassy arrives, and it is noticed by the Chinese historian that the old title which was objected to was again used.

When the Mikado died no honorific term was used by the Chinese historian. The ordinary word *Sì* was used. It was the 19th Mikado Win-giyou Ten-wau. An embassy was sent to China in A.D. 463. The new Mikado was raised to the throne in 454 according to the Japanese chronology, and was assassinated three years later, when his brother succeeded to the throne. The Chinese account says that the new Mikado sent an embassy and that he was brother of the last. The proper names of the Mikados are some of them different in the Japanese and Chinese accounts.¹ The discrepancy in chronology is about six years. The 20th Mikado Win-giyou, being the father of the 21st and 22nd, and the son of the 22nd becoming the 23rd according to both accounts, we must recognise the facts stated as trustworthy in the main.

The chain of Chinese testimonies to the ancient intercourse of China and Japan, reaching from B. C. 110 to the fifth century after Christ, should have an influence on our opinion as to the period of the introduction of Chinese writing into Japan. There probably never was a time since the days of the Shang dynasty, which fell in B. C. 1122, when the Chinese writing was unknown in Korea. Diplomatic intercourse and the engraved seals and titles of investiture written on either side implied it. A Chinese king, a native of Chili, ruled Korea

¹ The name *Bo*, "military" for the 21st mikado, agrees in the two authorities.

before Han Wu Ti subdued it, as Pan ku tells us in the Early Han History, his immortal work. The Chinese words and institutions were indelibly impressed on the Korean people, customs, and language, from that time. They would filter through to Japan. The intercourse of Japan with Korea was long anterior to the reign of Zhin-gou Kuwan-gu, and that period seems to me a very convenient stage in the natural development of things for the establishment of the regular teaching of the Chinese language in Japan.

The title of *beg* was introduced into the Turkish language in this way. Han Wu Ti carried Chinese institutions into the regions east of the Caspian, where the Turkish language prevails. Pek is the third of the five titles of investiture and hereditary rank under that of Wang. Remusat was the first in his *Recherches Tartars* to point out the identity of the two words.

The use of the word Shiyau-gun, Viceroy or Governor-general, given in ancient times to the rulers of Korea and Japan by the Chinese emperors, would be adopted with many other words as a part of the language, and hence its use in the early history of Japan. So of other words.

The mythological and fictitious element is in the old Japanese books undoubtedly large, and the temptation to invent history and chronology was very great. Scholars educated in the Chinese way constructed the chronology of the mythical Japanese period, and did not hesitate to assign the day of the month and year to events which by oral tradition could not in the nature of things be transmitted with so much verbal accuracy as they profess.

Our task is to select carefully the grains from the chaff in this mass of traditionary statements. We ought to be the more anxious to do justice to Japanese legendary history in this respect, because the Japanese authors who transmitted it have certainly not taken the old Chinese accounts as a basis, and erected on this foundation a structure of inventions. Their object has rather been to record their own traditions as the staple of their history, and to make use of Chinese history or not as it suited their view, and as it agreed or not with the native accounts they had before them.

The historical reality of the Empress Zhin-gou Kuwau-gu being

proved by the early Chinese notices, we must allow the general correctness of the Japanese statements in regard to Wani. If the Japanese are wrong in regard to him, I should incline to think it is in assuming too readily that the Chinese language was quite unknown before his time, and in representing him as being absolutely their first instructor in Chinese learning. They would more correctly describe him perhaps as being the most prominent among their early instructors. The engraved seals and accompanying documents sent to Japan two centuries and a half before the time of Wani may have been not entirely unintelligible. The Chinese historians say that the ancient Japanese tattooed their faces and pricked in patterns the relative ranks of the persons tattooed, according as they were patrician or plebeian. Is there here some notion akin to that of writing? At any rate it is true that a few miles from the island of Tsushima, the blue mountains of the Korean coast presented to the petty navigators of ancient Japan a point of perpetual attraction. Tsushima itself, as it lies in the channel, is nearer to Korea than to Japan. Yet it has always been counted as part of the Japanese empire, and the real distance between Korea and Japan is not the width of the whole channel, but that of the channel between Korea and Tsushima. We must not listen to the legends which, claiming autochthonous descent for the Japanese race, place too late in time the dates of early intercourse with Korea, and ignore the circumstance that for ages before the earliest instances recorded, Tsushima and the other islands in the channel pointed out the way from Korea to Japan and from Japan to Korea.

SEC. 2.—THE COMPARATIVE AGE OF THE KAN ON AND GO ON.

Mr. Satow states, p. 165, that it is uncertain whether the Go on is more ancient than the Kan on and *vice versa*. I wish to draw attention to the fact that physiologically the Kan on occupies a middle place between the Go on and Mandarin. Thus 京 *king*, "metropolis," is *kiang* in Fukien, *kyeng* in Shanghai and *ching* in Peking. As the Shanghai pronunciation is intermediate between the Fukien and the northern Mandarin, so the Kan on *kei* is intermediate between the Go on *kiyau* and the Mandarin *king* or *ching*. Further, that part of China from which the Kan on is derived has at present a much newer dialect than

that part of China from which the Go on was chiefly taken. The fact that the Ko-zhi-ki and Man-yefu-shifu use the Go on is strongly in favour of the superior antiquity of the Go on. This has a bearing on the question whether Wani taught the Go on or the Kan on. Motowori (p. 164 of Mr. Satow) says that he taught the Go on. This is likely, because the Go on is used in these two old books and in the oldest histories. The Chinese characters used in these works for native Japanese words were probably so used before in books and documents now lost. They may be regarded as representing the mode of writing in use from the time of Wani till the invention of the *hiragana*. As such, the characters used in these books for native Japanese words represent more or less accurately the sounds of those words as spoken during the fourth, fifth and sixth centuries. This is true if we adopt the native date for Wani's arrival, and also suppose that the Japanese began at once to write down their own words with the Chinese characters they were learning. This they would naturally do. Thus we carry back our knowledge of the Japanese pronunciation to the third century, or nearly so. In the interest of philological research this is highly important, for we can recover by this means the sounds of native words fourteen hundred years ago at the most, and eleven hundred at the least.

For example it is very common to hear aspirates *k'a*, *t'a*, etc., in modern Japanese, but they seem to be unknown in the Ko-zhi-ki. All syllables such as *ka* and *ta* in native words are *ka* and *ta* in the Chinese transcription, and never *k'a* or *t'a*. The habit of aspirating has grown up since, and has not become uniform. It is therefore still a proper thing to represent *t*, *k*, *ts*, *ch*, of the Japanese syllabary without a mark of aspiration, and to describe the aspirations that we hear as an irregularity.

Another fact that may be culled from the mode of writing Japanese words in the Ko-zhi-ki is that the division into surds and sonants in the Japanese pronunciation of their own words existed at the time of the Ko-zhi-ki, though the *nigori* was not invented to represent the sonants till long after. (See Transactions, Vol. VIII., pp. 168-9.)

Among 32 characters used to write the Japanese syllable *si* (*shi*) three are sonant. Perhaps these are best explained by the supposition that the native words they are used in representing, underwent the change by a special law. Thus *shita*, below, becomes *shita-zhita*, and

shi is here sonant by position. In my search I have not yet found the words Mr. Satow refers to. Among seven characters for *zhi* there are no surds. Mr. Satow states that the *nigori* was introduced about 1500.

In considering the bearing of the Chinese transcriptions in the early works on the question of the antiquity of the Go on, reference must be made to the occurrence of some Kan on spellings in those books, as pointed out by Mr. Satow (p. 169). The Ko-zhi-ki transcriptions are not in any case dissyllabic. The finals *ng*, *n*, *m* of Chinese sounds are consistently ignored. If *ju sheng* words are used, the final *k*, *t*, or *p*, as they may be, are neglected. A characteristic principle ruling the transcribers was that only the initial should be expressed. This is quite enough to entitle the Ko-zhi-ki transcription to be described as different from both the Go on and Kan on. I would recommend that we regard it as such. Thus 色 *shai*, in old Chinese *shiak*, is in Kzk *shi*, in Go on *shiki* and in Kan on *shiyoku*, shortened into *shoku*.

The occurrence of 登 *to* and 曾 *so* in tables of the Japanese *kana* as in the beginning of Hepburn's Dictionary, may be explained in this way. They belong to the monosyllabic or Ko-zhi-ki transcription. In the Kan on they are *tou* and *sou* and the same in the Go on. In the Ni-hon Shiyō-ki 津 is *tsu* and in the Ko-zhi-ki it is *shiu*. It means "ford," and is equivalent to the common Chinese word *tu*, *du*, "a ford," "to ford." It is this last word that is intended by the sign *tsu*, and 津 is written as agreeing in sense though not in sound. Afterwards, however, the Japanese used it as a sign of the sound *tsu*.²

The Ko-zhi-ki transcription was made then in the time of the

² The character 圖 *t'u*, *tu*, *do*, Go on *tsu*, Kan on *to*, is another case in point. Note that *tsu* is called the Go on of 圖 but the meaning of 津, which settles the point I contend for, that no *ts* in Chinese is read *tsu* in Japanese. For 渡 the Kan on is *to*. The word 次 has as its Kan on *shi* or *zhi*. Its Kon or meaning is *tsugi*, which is a native word. *Tsugi* for *tugi* is the Mongol dogar in *nig-dogar*, "first," *arabdogar* "tenth." In *tsuzuke*, *tsuzuki*, the first syllable is repeated. Ultimately it has the same root with the Chinese 續 *sū*, *shok*, *dok*, "connect," 次 *tsi*, *tsik*, *tsik*, "order," "succession." In the time of the transcription this original identity was hidden from view by letter-changes, and 次 could only be written in Japanese by *shi*, *zhi*.

These instances seem to shew that in the time of the transcription *tsu* and *du* must have been the values of the sign ㄗ, and that *tsu*, *du* must have been later.

prevalence of the Go on, and was probably the fruit of a reaction in favour of Shintauism and native conceptions as contrasted with Buddhism and a foreign cast of thought. The Kan on appears to belong to a later period. For insufficient reasons, native scholars have ascribed to the Kan on an unnecessarily high antiquity as compared with the Go on. The Go on came to Japan from Korea. The Kan on was sought by the Japanese in China. It was Buddhist missionary zeal that was the main instrument in giving the Go on to Japanese; it was the love of Chinese learning among the educated of Japan that brought the Kan on into that country.

If occasionally an example of Kan on occurs in the Ko-zhi-ki, this may arise from a selection having been made from the extant mode of pronouncing certain words, such selections afterwards becoming Kan on. In the Ni-hon Shiyo-ki the character 沙 *sha*, Kan on *sa*, Go on *shiya*, occurs with the sound *su*. It belongs neither to the Kan on nor Go on, but to the older transcription of which we have examples in the Ko-zhi-ki. Any Kan on spellings found in the Ko-zhi-ki and other old books may be placed in the same category.

The settlers in Japan from the peninsula of Korea and from China itself have been very numerous, as attested by the native history. Many varieties of pronunciation of Chinese characters must have found their way into the country, and we need not be surprised if we find them in the old literature.

For the character 仁 *jen*, "benevolence," *ni* is the sound in the old spelling without finals. The Go on is *nin*, as in the present pronunciation of the Wu country. The Kan on is *zhin*, and is an imitation of the new or Mandarin sound.

It may be asked, "How do we know that the Wu country, that of Sucheu and Shanghai, has retained the old sound?" I answer by a reference to Julien's *Méthode*, pp. 115, 116. 攘 *Jang*, pour *nya*. *Lalita vistara*, liv. iv., fol. 8; 攘 *Jang*, pour *nya*, dans *Poun-jang-che-lo* 若 *Jo* pour *na*. *Lal. v.*, liv. XII, traduction Française, p. 141. Pour *nya* dans *Fan yi* liv. VII, fol. 12. Pour *nya*, *Fan yi* liv. VI., fol. 40. Pour *nya*, *Jung wen yun tung*, A. *Jou*, pour *nya*, *Fan yi*, liv. III, fol. 14.

Under the letter J there are given by Julien 16 examples. Of these, nine represents *n* or *ni* in Sanskrit. One represents *sh*, six represent *dj*.

With the light derived from this information we conclude that in China from A.D. 400 to A.D. 700, the flourishing period of Buddhist translations into Chinese, the sound of the modern Chinese initial *j* was chiefly *ni* but also *dj*. The Go on represents the one of these, and the Kan on the other. Since *ni* is now retained only in the old middle dialect, that is. in Chekiang and Kiangsu, and the soft French *j* is now heard throughout the north and west of China over all the vast region where mandarin is used, it follows naturally that the Go on is older than the Kan on, and that the Kan on *zi* or *dji* represents a *j*, which in the 8th century was springing up in North China in place of the old *ni*, from which it was developed by sibilization, and by discontinuing the habit of touching the palate when pronouncing this initial.

The Go on has final *k* in some words where the Kan on has not. For example 惡 G. *saku*, K. *so*, to defame (*shikodzuru*), inform, tell (*tsugeru*). The native Japanese word in both cases retains the *k*, and is doubtless the same word. Thus taking the root *sok* as a common root in the mother language from which the Chinese and Japanese are derived, the Chinese has gradually dropped the *k*, but not till about the 8th century of our era. The Japanese has retained it. The same root (if we may venture to say so) has lost *k* in the English "say" and retained it in the German "*sagen*." In this instance also the Go on is certainly older than the Kan on. Compare³ also 怕 *p'a*. "fear," G. *paku*, K. *pa*. The phonetic 白 *pe*, formerly *baik*, shows that this root for fear had lost a final *K*, just as our word "fear" compared with the German "*fürchten*," has lost *k* in a similar way. In this case, also, the Go on is certainly older than the Kan on, for there are no traces now of the final *k* of this root in Chinese dialects known to foreigners.

The Go on keeps sonant initials more uniformly than does the Kan on. Thus 情 *t'sing*, "feeling," "kindness," is G. *zhiyau*, K. *sei*. The

³ Compare 迭 Go on *tatsu*, Kan on *tei*, "mutually." In K'anghi, 𨔵, "slip the foot," 𨔵, "run away," 𨔵, "arrive at," same as 迭, also "mutually." The Japanese dictionary makes the fourth meaning the prominent one, and just notices the third. This is the Giyoku Hen.

⁴ The character 迭 is given Go on *retsu*, Kan on *sei*, and in the 韻書字彙 *ri*. But these are different pronunciations in the Chinese, and should perhaps be regarded as Kan on.

sounds the Japanese had to represent were *dziang* and *t'seing*, as nearly as we can restore them. The Shanghai people say *zing*, and keep the old sonant initial. The Kan on has taken the surd form, and thus represents a time of transition from the period of the old established sonants to the modern mandarin epoch.

Sometimes the Kan on retains a form which is really older than the Go on. Thus 甲 *G. katsu*, *K. kafu*, old sound *kap*. The Go on in this case has final *t* for *p* through the influence of local dialects. In the old dialects it is not uncommon to meet with *t* for *p*, as in the Hakka and Amoy, e.g. 法 *fa*, old sound *pap*, Amoy *hwot*. Such forms belong to a transition period. The oldest known form was certainly *kap*, but this does not at all prove that the Kan on was older than the Go on. It only proves that in the Wu country *p* changed to *t* before disappearing, while in Shensi and Honan it remained *p* till it was dropped.

SEC. 3.—ON THE CHINESE PRONUNCIATION OF WORDS WRITTEN BY THE JAPANESE WITH チ “CHI” AND ツ “TSU”.

The character 恥 *chi* is used in Julien's Liste for the Sanskrit *ti* in one passage and *t'i* in another. In the Korean transcription it is both *t'i* and *tsi*. The first of these is of course the older. The latter is more modern. In the Chinese Tonic Dictionary Kwang yün it is found under Shang sheng in the sixth heading 止 *chī* and must be there read, with the other words grouped with it, *t'i*. The Japanese read it *chi*, but if it had been really pronounced in that way by the Chinese at the time they wrote down the sound, they would have spelled it *si* ㄙ as they have done with 止, 齒, 紙, and many other words called by the Chinese *chi*, or *c'hi*.

I copy from Julien's Methode the characters now heard *chi*, *ch'i*, and which occur as Chinese transcriptions of the Sanskrit *ti*, *t'i* or *di*.

只 *ti*, 侈 *dya*, 堤 *tya*, 庄 *ti*, 持 *di*, 枳 *di*, 池 *dhi*, 知 *ti*, 砥 *di*, 隆 *di*, *ti*, *li*, 室利 *tri*, 締 *t'i*, 緘 *ti*, 恥 *t'i*, 胝 *ti*, 至 *ti*, in very many cases. But also used for *chi* in China. 致 *ti*, 遲 *di*, 陟 *ta*, 雉 *di*, 鷄 *ti*, 鷄 *thi*. The following are the characters used in Julien to write the Sanskrit syllables *chi*, *chai*, *cha*, and *dji* 制 *chai*, *chi*, 志 *chi*, 指 *chi*, 支 *chi*, 旨 *chi*, *cha*, 眈 *chi*, 砥 *dji*, 紙 *dji*, 職 *chi*, 脂 *chi*, 胝 *chi*, 質 *chi*, 紙 *chi*. Of these the fact that one or two are in both

lists is explained by remembering that they were all characters which were destined afterwards to take *ch* for *t*. They made this change gradually, and some sooner than others.

The old normal initial of the 22 characters first mentioned was *t* or *d*. There is nothing against the view that the Japanese ㄗ was used to express the sound *t* and *d* in these words, just as it is used to write 地 *ti* which has not become *chi* in any Chinese dialect.

The Japanese pronounce the 1st, 2nd, 6th, 15th, 16th, all *shi*, as also the 22nd. They would therefore be called *chi* by the Chinese whom the Japanese heard pronouncing them when they wrote the transcription, just as they would in a different part of the country be heard *ti*, *dya*, etc., by the Buddhist translators who use them for those Sanskrit syllables.

In regard to *tsu* it is certain that the Chinese had it as a clearly pronounced syllable, or part of a syllable, at a time when ㄗ *tsu* and its *Hiragana* forms began to be used. The Japanese did not, however, write the Chinese *tsu* with these marks. They preferred to express it by *su*. See Kwang yün in 10 虞 where there are six words with the phonetic 取 pronounced *tsu* and in Japanese *su*.

The present Chinese 周 *cheu*, 騶 *tsou*, are now pronounced so as to rhyme with our English "cow," "now." Formerly they were *chu*, *tsu*. The Sanskrit syllable *chu* is represented by 周 in Julien's list. All such words, whether pronounced with *ch* or *ts* are written by the Japanese シウ *shiu* or ウ *sou*.

Under the heads 尤 *you*, 候 *heu*, 幽 *you*, in the Tonic Dictionaries, all such words are found. The initials under these three headings are the following:—Upper *y*, lower *li*, *t's*, another lower *y*, with the usual *i*, *ng*, *dz*, another *dz*, *si*, *c'h*, another *c'h*, *ki*, *ch*, *dj*, *ni*, *shi*, *k'*, *k*, *p*, *sh*, *c'h*, *ts*, another *dj*, *h*, *z*, *d*, *t*, *g*, *v*, *m*, lower *h*, *u*, *n*, *l*, *s*, *k'*, *ts*, *t'*, *ng*, *k*, *t*, *dz*, *b*, *m*, *yu*, *g*, *p*, *b*, *ts*, *sh*, *ng*, *h*, *m*.

Ts and *s* are kept separate as initials in Chinese, though joined in Japanese.

Mr. Satow states, p. 169,* that 都, 豆, 頭, 通, 追, used in the

*Mr. Satow's words are: "They must have been originally pronounced *tsu*, *tsui*, *tsung* in the Go on, from which all but the last were taken." I do not see why, if such an admission is made in regard to *tsu*, a similar admission should not be made in reference to *chi*.

Kozhiki and other early books must have been pronounced by the Chinese *tu*, *tung*, and *tui*. With this I fully agree, except that the 2nd and third were *du*. The dictionary *Giyoku hen* gives the Go on of 頭 *tsu* and the Kan on *tu*. In other words, the old sound was *du* and the new *deu*. The last afterwards became *t'eu*. *Teu* 豆 Go on *dzu* Kan on *tu*. *Tung* 通 is Go on *tsuu*, Kan on, *tu*. *Chui* 追 Go on *tai* Kan on *tsui*. This last was *tai* before it was *tui* and *tui* (for so I read *tsui*) before it was *chui*.

In the case of 都 *tu*, Kan on *to*, let it be noted that in the modern Shanghai dialect the vowel *u* is very much used. Thus *to* 多 is *tu* 大 *ta* is *du*. This may account for the Go on of this character being *tsu* (*tu*) when in North China it was *to* (Kan on).

In p. 168 Mr. Satow enunciates the principle that when the Japanese transcribers had not any Chinese sounds "they used the nearest approach they possessed." This is a safe principle. Below he considers the case of the syllable *tsu* and claims that they used *su* to write it because they wished for uniformity's sake not to abandon the dental sibilant series. I regard this reasoning as of doubtful validity, and prefer the former principle. It is better to admit that the sibilization of the syllables *ti* and *tu* was after the invention^{*} of the *kana*.

Neither the alphabets of western languages nor the syllabaries of eastern languages can check the progress of letter changes. Letter changes go on in spite of prevailing systems of writing, although educators do much, and might do more, to modify and improve national modes of pronouncing.

SEC. 4.—THE THIRD TRANSCRIPTION OR THAT KNOWN AS

唐音 "TAU ON."

I have only one book on this subject. It is 唐音三字經. It gives no information on the time, place, and manner of introduction

^{*} The question is somewhat complicated. The syllabary of any nation is both natural and graphic. The graphic syllabary dates from the historical epoch of its introduction. The natural syllabary changes gradually and irregularly. Some parts of a country change faster than others. The change from *ti*, *tu*, to *chi*, *tsu*, is natural, not graphic. It must have taken place earlier in some parts of Japan than in others, and may have begun long before Kou-boku Dai-shi's time in certain localities.

of the Tau on. Mr. Satow, page 165, gives us the following account, apparently following Mr. Aston: "The Tau in was introduced by the monks of Wau-baku san, near Uji in Yamashiro, towards the end of the 17th century."

Mr. Satow does not mention or attempt to meet the difficulties which *prima facie* occur in the examination of this transcription. He answers the question why it was called Tau in by merely saying that it was supposed to be the "Chinese sound" of the Chinese characters at the time of its introduction.

I formerly thought it belonged to the Tang dynasty, because it marks the sonants with the *nigori*. Thus 常 is spelled *djiang* and 從 is *dzung*. But this is an error. There are many peculiarities in this transcription which do not accord with the pronunciation which we know to have prevailed in China in the Tang dynasty.

That the sonants of the old Chinese language still existed in the Yuen dynasty we know from the Baschpa transcription. The existence of the sonants in the Tau on is in agreement with the hypothesis that it was the central dialect of China as spoken about the mouths of the Yangtse and Yellow River, and in the country stretching westward along the lower course of those rivers to the centre of the country that is represented by the Tau on.

Can the hypothesis that the dialect intended by the Tau on had this locality be sustained? In favour of it there are the following arguments. That dialect probably had sonant initials as given in the 中原音韻 *Chung yuen yin yün* of Cheu te ts'ing, but this dictionary was made in the Yuen dynasty and belongs therefore to a time somewhere near the beginning of the 14th century. Jesuit writers of the 16th and 17th centuries give no new information in regard to the dialect of that part. They recognize only mandarin proper and in some cases the Amoy dialect. But the sonant initials still exist on the south bank of the Yangtse and on both sides of Hang cheu Bay. (1) If the existence of sonant initials be counted a first argument for the hypothesis, a (2) second may be derived from the existence of final *m*. Cheu te ts'ing gives final *m* uniformly. So do the Baschpa inscriptions examined by Mr. Wylie. Final *m* is now lost from the region referred to, but it may have existed there down to the date of the Tau on transcription.

In my copy of the *Tau on san Zhi kiyau*, final *m* occurs frequently, but it is often placed on the wrong words. Some words that ought to have it have *n* in place of it. It will probably be found uniform in carefully edited copies.

In the cases I have examined, out of 105 characters *m* is rightly used in 14 instances and wrongly in 21. Final *n* is rightly used in 62 instances and wrongly in 8. These figures indicate that there was originally a distinction between *m* and *n*, but that for some reason great confusion has come to prevail in Japanese usage. There is manifestly a tendency to push out the final *m* formerly registered in the transcriptions of Chinese characters.

Another hypothesis that may be considered is conveyed in the question,—“Is the *Tau on* the same in its main features with the existing Old Middle Dialect or that of *Sucheu*, *Ningpo*, *Shanghai* and *Hang cheu*?” This must be affirmed or negated for the reasons more or less valid that (1) no final *k* occurs as at *Shanghai*. Thus 六 is *lok* at *Shanghai* and *ro* in the *Tau on*. The vowel *o* is in favour of the hypothesis, but the dropping of *k* is against it. (2) Initial *h* and *f* are often dropped. Thus 伐 *wa*, 婦 *uweu*, 父 *u*, 行 *in*, 乎 *u*. In *Shanghai* or its neighbourhood these words are heard *wak*, *wu*, *wu*, or *vu*, *yeng*, *wu*. In this particular there is a certain amount of likeness between the *Go on* and *Tau on*. The words 皇 *wang* for *hwang*, 憂 *ya* for *hia*, are additional examples.* (3) The sonants agree in most cases. Thus 同 is *doing*, 平 is *being*, 强 *giang*, 傳 *dziuen*, 陳 *dzin*. In this respect the *Tau on* agrees with the Old middle dialect as spoken in the four cities mentioned above, as also with the *Baschpa* monuments of the *Yuen* dynasty.

Another hypothesis is worth considering. Is the *Tau on* made up of fragments from various dialects under Japanese editorship? If it is really no older than the 17th century, the sonant initials can only be referred to Central China and the right bank of the *Yangtse*. But there are anomalies which the dialects of that region do not explain. Why is 相 spelled *chang*, 不 *boya* and 地 *tsui*? In these peculiar

*So also 號 *au* for *han*, 賢 *yen*, for *hien*, 雄 *yong* for *hiung*, 下 *ya* for *hia*.

spellings we seem not to be among Chinese dialects but, to be enveloped in the fog of the indistinct conception of some native scholar groping his uncertain way along the paths of a subject not well mastered.

Here I leave these hypotheses, pending further knowledge of the history of this transcription, the publication of which may throw fresh light on the subject.

The Tau on teaches some interesting facts in regard to the powers of the letters in the Japanese syllabary in the 17th century.

1. The labial series was well advanced to its present position. Thus 香 *hiang*, "incense," is in Go *kau*, in Kan *kiyau*, and is shortened into *ko*. But in Tau it is *hiang* if only we give to ㄣ the common value *ng*. The sign ㄣ is used for *hi* in Chinese. Since this sign was in the early transcriptions used for *pi* it is quite clear that its current value had changed in the interval between the first and second transcriptions and the third.

It may be asked, Why is 學 written *kiya* in Tau while 兄 is *hiung*? I suppose the reason to be in the fact that 學 belongs to the sonant series. In the Dictionary before referred to Chung yuen yin yün, it is *hiau* in the Hia p'ing tone. At Shanghai it is *ok* and *yak*, the commencing vowels being pronounced low and very slightly aspirated. At Amoy it is *oh* and *hak*. In the Giyoku hen, the syllable spelling 爲角 is meant for *yak*, or *ak*. In Kanghi it is *hak* with the aspiration weak. The Tau on *kya* is evidently a despairing effort to write something which the transcriber did not know how to write with the means at his command. He fell back on the old initial *k* of the earlier transcription. He did so in 黃 *hwang*, which he writes *kwang*. But 皇 *hwang* he writes *wang* as it is pronounced in the old middle dialect. He keeps *k* in writing 訓 *hiün*. It is *kwan* instead of being *kun*, which is the old mode of pronouncing it.

There are just enough examples to shew that ㄣ was in the 17th century called *hi* (and even *i*, as is 燕 in Tau called ㄣ *yin*).

2. In the 17th century ㄘ and ㄙ were pronounced as now,—*chi* and *tsu*. Thus ㄘ is used to spell 衆 *chiung*, 稱 *ching*, 中 *chiung* 朝 *chau*, 竹 *chio*, 傳 *djiuen*, 春 *chiun*, 終 *chiang*, 紂 *djin*, 戰 *chyen*, 陳 *djin*. The words here spelled with *dj* all belong to the sonant

series. The rest are all surds. Let it be noticed here that this Japanese syllabic sign has in all cases the value *chi*.⁷ But in the early transcriptions it was used to spell Chinese words with an initial *t*. Evidently it changed its value between the period of the two transcriptions and that of the third. It is so, also, with *tsu*. This symbol was in the old transcriptions used for *tu*, *du*. But in the Tau it is *tsu*. The characters 祖, 專, 親 are spelled *tsui*, *tsugen*, *tsuimu*. Then we have also 知 *tsui*, 此 *tsui*, 絲 *tsui*, 族 *tsu*, 止 *tsui*, 子 *tsui*, 曾 *tseng*, 楚 *tsui*, 楚 is *tsui*.

If the transcriber wishes to write the syllable *ti* or *tu*, what does he do? He writes *tei* for *ti* and *to* for *tu*. Thus 帝 and 體 are *tei*, while 讀 is *to*, and 都 is *to*.

In the time of the old transcriptions *tsu* represented the Chinese *tu*, but in the time of the third transcription the Japanese signs *to* and *tu* were preferred. The inference is easy. The symbol in Japanese had changed its value in the interval from *tu* to *tsu*.

3. The final *n* of the old transcriptions has in the Tau transcription become *ng*. This may be concluded from the disappearance of *u* as a representative of *ng*. A thousand years ago there was no tendency among the Japanese to pronounce their final *n* like our *ng*. Consequently it never occurred to the transcribers to use it for *ng*. At present it is very commonly heard *ng*, and this must have also been the case two centuries ago, for it is only in this way that we can account for its regular use to represent the Chinese *ng* in the Tau on.

Mr. Satow tells us that *mu* was the form first used, and that it was subsequently introduced. In this case *mu* first became *n* and afterwards *ng*. [See page 28 of Mr. Satow's Transliteration of the Japanese syllabary.] I take *mu* here to represent *n*.

The symbol *tsu* represents therefore a very changeable sound. This symbol was invented later than the other symbols, and it met a want occasioned by the change of the final *m* to *n*, of which Mr. Satow has given examples. Let me add some here. *Em*, "woman," in Mongol

⁷ The character 相 *siang* is called *chiang*. This is an anomaly I do not know how to account for. It takes *ch* at Amoy, but that dialect is not like the Tau in other respects.

is the Japanese *onna*. The Mongol *yamora*, "what," called in some dialects *namora*, is the Japanese *nani*. The Chinese *shen mo*, "what," is compounded of two words *shin*, old form, *dim* and *mo*, old form *ma*, both meaning "what." But *d* and *n* are interchangeable letters.

The final *n* which anciently replaced final *m* is rapidly changing to *ng*. In China a change very like this has taken place. The old final *m* became *ng* formerly. More recently it has become *n*. In central China at present the final *n* and *ng* coalesce to a considerable extent. In some dialects *n* is preferred for the united group. In others *ng* is the favoured sound.

In some words Japanese and Mongol keep *m* where the Chinese has changed it for *n*. *Yom*, the old Chinese for "drink," has become *yin*. The Mongol is *omdagan*, "drink." The Japanese is *nomi*, "to drink." That the initial *n* is here no bar to the identification of the words is clear from another example which in the dictionaries will be found near these. Japanese *nemuri*, "sleep;" Mongol *omdaho*, "sleep;" *omdagolho*, "cause to sleep." Chin 寢 *t'sin*, "to sleep," "lie down to sleep." The old form of *t'sin* is *t'im*. But *t* and *n* are interchangeable. The Mongol has omitted the initial in both words.

I have indulged in an etymological digression of a sort which is to my mind exceedingly interesting as pointing out the way to the proof of the ultimate identity of the languages at a time prior to the origin of the Mongolian and Japanese grammatical systems, and when language consisted, as in Chinese, only of words and syntax.

HISTORICAL NOTES ON NAGASAKI.

By W. A. WOOLLEY.

[*Read January 11, 1881.*]

My apology for the following notes on the introduction of foreign commerce and religion into Nagasaki, and on its early history, must be the special interest attaching to this place by all who study the early relations of Japan with foreign countries.

My information has been chiefly derived from a manuscript in 14 volumes entitled "Nagasaki Kokon Shûran," compiled by one Matsura Tô, of Nagasaki, in 1811, and now preserved in the archives of the Kenchô at Nagasaki. A list of the books referred to in this compilation is appended to this paper.

The obscure village, rarely visited in early times even by the Japanese themselves, from which Nagasaki has sprung, was not called by its present name, but by the following:—

Tamakina Mura,
Fukatsuye,
Fukaye no Ura,
Fukutomi no Ura,
Nigitatsu,
Tamana no Ura,
Tama no Ura,

of which Fukaye no Ura, Nigitatsu, and Tama no Ura were the best known. It is not clear, however, at what dates these names were applied to it.

In the reign of the Emperor Keikō (A.D. 71-130), Toyotowake no Ōkimi received Hi no Kuni as his domain, and passed through Fukaye no Ura.

Hizen and Higo, it may be mentioned, once formed one province, called Hi no Kuni, "the province of fire." The story goes that in the reign of the Emperor Sujin (B.C. 97-30), Tsuchigumo and Uchizaru, two persons of Mashiki no Kōri in Higo, with 180 of their followers, revolted. Take Ōgumi speedily overthrew them, and he attributed his victory to divine agency. Having reached Shiraga no Yama, in the district of Yatsushiro, he perceived, after sundown, a fire burning in the sky, which gradually descended upon the mountain and hung there like a lamp. He reported this to the Emperor, who at once named this part of the country Hi no Kuni, and, that Take Ōgumi's name might not be forgotten in after-time, he called him Hi no Kimi Take Ōdzumi and made him lord of this province. Keikō Tennō, when making a progress through Tsukushi, is said to have been guided by this light. The old name of Kiushiu was Tsukushi, "Erected stones," stone forts having been erected, in various parts, to protect the land against foreign invasion. This name at first was synonymous with Chikuzen and Chikugo, but as the government office for the control of the western provinces was at Dazaifu, in Chikuzen, the whole of Kiushiu came to be called Tsukushi. Kiushiu was also called Chinzei, and on the Torii in front of the Suwa temple in Nagasaki were inscribed the words "Chinzei Taisha" (the large shrine of the country subjugated in the west). Tametomo, the brother of Yoshitomo, lived for a long time in Aso, and was known as Chinzei no Hachirō.

Jingō Kōgō, when on her expedition against Korea, is said to have stopped at Fukaye no ura, and many of the islands, capes and rocks at the entrance of the harbour are supposed to have derived their names from her visit. The stones which the Empress put in her breast to prevent her being delivered until after her return from Korea, are said to have been taken from the village of Hirashiku, about a *ri* to the north of Nagasaki.

In the 5th year of the reign of the Empress Suiko (598. A.D.), Rinshō, the heir of the King of Kudara (one of the divisions of Korea), visited Fukaye.

In the time of Saga Tennô (810-842), the temple of Jin-gu-ji, on the site of which is the present Suwa shrine, was built.

In 998 A.D. the Government at Dazaifu reported to Kiôto that Chinese pirates had ravaged the coast of Tsukushi, and in the following year troops were sent out to punish them.

In April, 1019, pirates again ravaged the coast of Tsukushi and the Island of Iki, and killed Fujiwara Masatada, who was in charge of that island.

In the time of Takakura Tennô (1169-1181), Norimori Chiunagon, of the Taira family, received Fukaye for his domain.

Fukaye no Ura formed one of the 48 villages of Omura in the Sonogi district. This name was in existence in 1552, for one of the *yema* (thank offering picture) in front of the shrine of Tarayama Gongen has inscribed upon it the words, "Presented by Nagasaki Jinzayemon no Jô Yoridzumi, of Fukaye no Ura, in the 21st year of Tembun" (1552).

Nagasaki Kotarô is said to have received Fukaye no Ura as his fief from Yoritomo during the period Bunji (1185-1190), and to have lived on the hill above Shun-toku-ji. It is from him and his descendants that Nagasaki is thought to have derived its name. Previous to his coming, boats which touched here were called *Fukaye bune*, but afterwards *Nagasaki bune*, and the people who dwelt here Nagasaki men, and this name gradually came to be given to the place. About this time Yoritomo is also said to have rewarded other Samurai by grants of land in the Western Provinces. Among these were Tomachi Tôjirô, Chiwata Tarô, Tokitsu Shirô and Urakami Kodayu, from whom the names of the villages Tomachi, Chiwata, Tokitsu and Urakami may have been derived. These Samurai built *yashiki* for themselves on the fiefs they received, and conducted themselves as independent chieftains, taking the side, in time of war, of one or other of the three notable daimiôs of Kiushiu. When Kotarô came, Fukaye was poor and the land untilled, the only inhabitants being a few fishermen and salt manufacturers in the part now known as Yedo Machi.

Nagasaki Samenosuke was the 8th in descent from Kotarô, and having no heir he adopted Yasunaga, the 3rd son of the chieftain of Arima. His son Jinzayemon married the daughter of Ômura Mimbu no Shôyu, Sumitada, better known as Ômura Risen (Risen being his

Buddhist name). Jinzayemon inhabited the castle above Shun-toku-ji, which had been built by his ancestor Nagasaki Kageyuzayemon no Jô Taira no Tamemoto in 1333. He was a man of considerable influence, which was enhanced by his family connection with the houses of Ômura and Arima, and was continually engaged in feuds with his neighbours, who envied his prosperity.

During the period Tembun (1532-1555), Shimadzu Yoshihisa of Satsuma, Ôtomo of Bungo and Riuzôji Takanobu of Hizen, contended for the supremacy in Kiushiu. Jinzayemon's chief enemy was Fukahori Shigeiye, who fought under Riuzôji's flag. He repeatedly invaded Nagasaki, but without success.

Owing to the frequency of attacks made on Nagasaki, canals were formed for the protection of the town. In 1592 a large canal was made between Shimabara Machi and Moto Hakuta Machi, and in 1596 another was made between Sakura Machi and Bungo Machi. In 1600 the Governor ordered the people to make two canals, one passing from Kagawa Machi in a N. W. direction to Funatsu Machi, between the inner and outer towns, and one in a S. E. direction from Kago Machi to Shita Machi.

In 1539, or according to other accounts in 1542, a *kurofune* (black ship) with *Nambanjin* (a name applied especially to Portuguese and Spaniards) on board visited Tanegashima in Osumi. Amongst those who landed on this occasion was one of the literati of China, who acted as interpreter between the foreigners and the chief of the island, Hiôbu no jô Tokitada. In reply to questions, this interpreter is represented as having described his friends the foreigners as being ignorant of etiquette and characters, of the use of wine cups and chop sticks, and as being, in fact, little better than the beasts of the field. The chief of the foreigners taught Tokitada the use of fire-arms, and, upon leaving, presented him with three guns and ammunition, which were forwarded to Shimadzu Yoshihisa, and through him to the Shôgun. Suginobô, a priest of Negoro-ji, is said to have spread the use of fire-arms through the Eastern Provinces.

In 1549, a Namban ship touched at Usuki, in Bungo, for the purpose of trading and spreading religion—a combination of God and Mammon worship which characterized all the early visits of foreigners to Japan.

After this, foreigners came from time to time to Funai in Bungo, Kuchinotsu in Shimabara, Fukuda and Yokose ura in Ômura, and Akenokouchi in Hirado, until 1569. Owing to the indifferent anchorage in Ômura, the Portuguese were compelled to seek for a better harbour, and eventually, in 1570, they discovered Nagasaki (at that time governed by Jinzayemon), and asked permission to trade there. In the following year, for some reason not clearly assigned, Jinzayemon retired from Nagasaki. For the next 21 years, until 1592, it was under the jurisdiction of Ômura. He received the foreigners in a cordial manner, and pretended to lean towards their religion merely for the sake of inducing them to visit his dominions exclusively, and thereby debarring other chieftains from obtaining fire-arms, etc. The priests were deceived by his complaisance, and asked him on behalf of their church for the territory of Nagasaki, with jurisdiction over the same. Ômura refused at first to grant their request, whereupon the priests and merchants threatened to withdraw, and to select some other port for their countrymen. Arima happened to be in Nagasaki at the time, and acted as a mediator, the result being that Nagasaki, in 1573, became the territory of the Christian sect.

Nagasaki became a flourishing place after the advent of foreigners, and merchants from neighbouring provinces settled here, hoping to enrich themselves by foreign trade. Ômura had the town laid out in six streets—called Shimabara Machi (the present Manzai Machi), Ômura Machi, Hokaura Machi, Hirado Machi, Yokose Machi, and Bunchi Machi. These streets formed the commencement of the inner town. No ground rent was levied upon it even after Nagasaki became Imperial territory. As the town grew, paddy and arable land outside this inner town were turned into 40 streets, and a fixed annual ground rent was paid to Government. In 1673 this rent amounted to 3800 *me* of silver; in 1677, to 4700 *me*; in 1678, to 5000 *me* (one *monme* = 58.33 grs. Troy).

In 1672 some of the larger streets were divided into two or three streets, the total number then being 77 in the inner and outer towns, exclusive of Deshima, Yoriai Machi and Maruyama.

For purposes of Government service, by land and sea, these streets were divided as follows:—

Inner town : 11 Sea service.

15 Land do.

Outer town : 20 Sea Service.

34 Land do.

[I may mention that the road over Himi tōge was made on the occasion of Ōmura's retainer's visit to Nagasaki to lay out the town.]

From 1558 to 1592, the whole of Japan was convulsed with civil war. The feudal lords obeyed neither Emperor nor Shōgun, but each strove only for his own aggrandizement. During such a period, it is not surprising that a place like Nagasaki, far distant from central control, should have been allowed to manage its own affairs, and that the people, whose imaginative feelings were worked upon by miracles, and whose hearts had been won by the self-denying and devotional character of the Jesuits, should have adopted the Christian faith. So strongly did they become imbued with it, that in 1567 there was hardly a person in Nagasaki who was not a Christian. The zeal with which the Fathers carried on their propagandism led them in November of the same year to set fire to the temple of Jin-gu-ji, and to attribute the cause of the fire to the wrath of God. After this, all the branches of this temple, some 80 in number, in and around Nagasaki, were destroyed. The zealotry of the Christian converts was encouraged by the fact of Ōtomo Sōrin Munechika, Lord of Bungo, who had been converted through the influence of his *Karō*, Tawara Tsugitada, having burned all the temples and idols in his dominion and put many of the priests to death. The priests of Hikōsan prayed for his death, upon which Ōtomo sent out 4300 men and destroyed that large temple on the 6th of May, 1576, the birthday of Shaka.

The overthrow of the Shintō and Buddhist faiths in Nagasaki lasted from 1587 to 1603, during which period there were eleven Christian churches (called by the Japanese *Ki-kuwan*—strange sight) in the town, with jurisdiction over it and Urakami.

The three largest churches were on the site of Shun-toku-ji, Honren-ji, and Tateyama Yashiki. The remaining eight were used by the Fathers as private residences, alms-houses and offices.

In 1587, after Shimadzu had gained the supremacy in Kiushiu, Hideyoshi led an expedition against him. On his return he stopped at

Hakozaki, near Hakata. The head men of Nagasaki purposed to pay court to him here, but Hideyoshi declined to receive them in audience, and having heard that two Christian converts were among his retinue, he had them crucified at the Torii of the temple of Hachiman in Hakozaki. He further commanded the Jesuits to leave Japan, and not to return. In the same year he sent Tōdō Sado no Kami to expel them and to prohibit the Christian religion. Tōdō was recalled, but returned to Nagasaki with Terazawa Shima no Kami in 1588. They presented the people of the inner town with a charter signed by Hideyoshi, remitting all taxes. The Government was afterwards entrusted to Nabeshima Hida no Kami, as Daikwan. He carried it on from 1588 to 1591.

After Tōdō's coming, the head men of Nagasaki were four in number, one of whom went yearly to pay his respects to Hideyoshi. Terazawa, the first Governor (1592), gave them official permission to act under the title of Machi-doshi-yori. Nobunaga having heard, when at Adzuchi in Gōshiu, that the Jesuit Father Organtin was living at Nagasaki, invited him to an audience at Ōzaka, and thinking that the doctrines of Christianity might as well be tolerated as those of Buddhism, which had also been introduced from abroad, gave him four *chō* of land in Bōmon-dōri in Kiōto whereon to build a temple, and a yearly stipend, and further told him to invite others of his persuasion. This temple was called Namban-ji. These Fathers gathered together in the temple numbers of sick persons and beggars, and distributed food, clothing and medicine among them. Some of the nobility, and many of the lower classes, believed in the new doctrines, and Christianity spread rapidly over the Gokinai. Nobunaga was astonished at their liberality, and fearing that they had designs on Japan, repented that he had invited them, and in 1581 intended to destroy the temple and priests, but was prevented, owing to the disturbed state of the country. It was, however, destroyed in 1589 by order of Hideyoshi, and all Japanese Christians were condemned to death.

In 1594, six Bateren (Jesuit Fathers) and 24 of their followers, who were in hiding in Kiōto and Ōzaka, were sent to Nagasaki and there put to death.

Hideyoshi recognized the important position Nagasaki was likely to take, and sent five commissioners to inquire into its condition, to order

the people to obey the rule of Ōmura Risen, to return to the faith of their forefathers, and to repair the temples, etc. The Christian churches were reduced to three. To counteract the power of the priests, Hideyoshi appears to have selected some merchants of ability in Hakata, and to have transferred them to Nagasaki. The place where they lived was called, after them, Hakata Machi. Here they traded with the foreigners, and endeavoured to suppress the evil doctrines of Christianity. The Christians were contumacious and refused to obey the officials set over them, and constant quarrels took place. The influence of the priests was again in the ascendant, but the presence of Hideyoshi, at this time (1592) at Nagoya on his way to invade Korea, awed them. Terazawa was sent as Governor, with orders to expel the foreigners. To execute these he summoned the head men of Hakata Machi and Gotō Machi; but they took umbrage at the place assigned them at the meeting, and whilst the altercation was going on, Terazawa was recalled to take part in the command of the van of Hideyoshi's army. It also appears that the Fathers made rich presents to the favourite mistress of Hideyoshi at Fushimi, and thus, in one way and another, this attempt to expel the foreigners was frustrated. The three principal churches once more controlled the people, and issued their orders regardless of the authorities.

The head men of Nagasaki determined to visit Hideyoshi at Nagoya, but on their way they incurred the displeasure of some daimiō by not descending from their palanquins when meeting his train. Their presents, also, were not equal in value or workmanship to those given by the Fathers to Hideyoshi's mistress, Yodo dono. This, coupled with their rudeness to the daimiō, enraged Hideyoshi, and they fled to Nagasaki for their lives. Then the people of Nagasaki thought it necessary to obtain Hideyoshi's pardon, and looked about for some suitable person to undertake the office of conciliator. A person named Itō Kōshichirō, of Nagoya in Bishiu, chanced to be living in Nagasaki, whither he had come in the period Tenshō (1573-1592) with the object of advancing his interests by foreign trade. Being an able and eloquent man, of prepossessing mien, as well as a popular favourite, he was chosen to ingratiate himself with Hideyoshi, and obtain pardon on behalf of his fellow townsmen. Terazawa was also a Bishiu man, and knowing Itō's parentage, he spoke in his favour to one of Hideyoshi's councillors. Being

received in audience, he falsely represented himself as one of the head men of Nagasaki. Hideyoshi was pleased with his address, gave him the name of Tōan Murayama, and appointed him *Daikwan* of the outer town. Tōan's nickname was Antō, short for Antonio, as he was thought to resemble in appearance the figure-head of a Portuguese ship.

He paid 25 *kwanme* of silver yearly to the Government, being allowed to farm the taxes and keep for himself the surplus over the above sum. This occurred in 1592. Tōan held office for over 20 years, and lived in luxury and extravagance, which excited the envy of one Suyetsugu Heizō, and made him plot to compass Tōan's ruin. The case he brought against Tōan was heard in Yedo in 1616. Tōan gained the day. Heizō, however, had another charge to prefer against him, to the effect that Tōan was concealing in Nagasaki his third son, who was a Bateria, and had been exiled; and further, that when Iyeyasu was besieging Hideyori, this son had conveyed provisions, etc., into the enemy's camp. Tōan was convicted and beheaded in Yedo. Heizō succeeded him in the government of the outer town in 1616, and paid 50 *kwanme* of silver to the government. His family retained this office till 1676, when Suyetsugu Shigesada was banished to Oki for having traded illegally with Taiwan. After this the Machi-doshi-yori conducted the business of Daikwan. In 1699 the names of Inner and Outer town were abolished, and six Machi-doshi-yori managed all municipal affairs.

In 1603 the Christian sect fell into disrepute, and the following year saw the revival of the native religions. Five *Metsuke* (afterwards called *Machi-dzukai*) were appointed as spies on the people.

Ogasawara Ichian, who was Governor at the time, heard that one Dōchi, a Buddhist priest who had laboured for many years to bring the people back to the true faith, was living in retirement in Nagasaki, and having sent for him ordered him to build a temple in Kawaguchi. This was called Sho-gaku-ji. In 1606 it was removed to the site of a Christian church in Funatsu Mura, the superior of which had been the blind Bateria Tawara Moriichi, the younger brother of Tsugitada, the *Karō* of Ōtomo Sōrin.

Moriichi afterwards apostatized, and was appointed by Hidetada one of the inquisitors to search for Christians throughout Japan. Sho-

gaku-ji was burnt by the Christians, rebuilt on the site of the present temple of Jō-an-ji, and in 1676 removed to its present site in Koshi Mura.

The five priests who were the most zealous Buddhistic revivalists were the Superiors of the temples, Sho-gaku-ji, Dai-on-ji, Ko-yei-ji, Dai-kō-ji and Ko-tai-ji. They received the special thanks of the Government, and in addition, substantial rewards and presents, which, indeed, they deserved, for they were cruelly persecuted and stoned by the Christian sect.

The population of Nagasaki in 1604 is put down at 24,693.

In 1613, owing to the Buddhist priests having reported that the foreigners intended to seize Japan, Okubo Sagami no Kami was ordered to arrest Christians in the Gokinai, Chiugoku and Kiushiu, and to give them into the charge of various daimiōs. In July or August, 1614, Yamaguchi Suruga no Kami was sent by Iyeyasu to expel the priests and destroy the churches. In October, over 100 Bateren and others, who had been arrested in various parts of the country, among whom were Takayama Ukon, the Lord of Takatsuki in Sasshiu, and Naitō Hida no Kami, were banished to Macao. The daimiōs present at the destruction of the churches were Nabeshima Shinano no Kami, Terazawa Shima no Kami, Arima Sayemon-no-suko, Matura Iki no Kami and Ōmura Tango no Kami. The altars, made of bronze and gold, were buried. In 1626, Midzuno Kawachi no Kami was sent to Nagasaki, and for three years carried on a rigid search for Christians.

In 1629, the practice of *Fumi-ye*, or trampling on the picture of Christ, was instituted. Paper pictures were first used, but as they were soon worn out, wooden slabs (*ye-ita*) were substituted; and again, in 1669, twenty bronze plates were cast and engraven with the image of Christ by one Yusa, an engraver who lived in Nagasaki. These plates were made of metal taken from the altars of the Christian churches. They were about five inches by four inches, and one inch in thickness. The ceremony of trampling on them was performed annually from the 4th to the 9th of the 1st month. Recusants were expelled from their homes, and had to take refuge in the fields and woods. When arrested, if still contumacious, they were taken to the hot springs of Shimabara, sprinkled with the boiling water and thrown in.

Takenaka Uneme no Kami, who was Governor from 1629 to 1632, brought the Government into disrepute by acting for his own selfish

ends. His property was confiscated and he was sentenced so commit *hara-kiri* in Yedo. He established a still more rigid inquisition, and by arrangement with Matsukura Bungo no Kami, sent the Christians to the hot springs of Shimabara, where their backs were slit open and hot water poured over them. Recusants were thrown into one of the springs called Hachiman jigoku. In Nagasaki, at Nishizaka, they were crucified, burnt and subjected to various kinds of refined cruelty.

In 1633 two Governors were appointed in order to prevent the recurrence of the arbitrary conduct displayed by the last named Governor. They reached Nagasaki about the end of July, the usual time of the arrival of foreign vessels, and returned about the end of the year, after the departure of the ships. From 1638 the Governors lived at Nagasaki without returning to Yedo.

During their absence, the inner town was subject to the Machidoshi-yori, and the outer town to Suyetsugu Heizô, the *Daikwan*. When in doubt how to act, they sent to Yedo for instructions.

Upon the arrival of a foreign ship, a guard-ship, with an official called *Chôji*, was sent out to watch her movements, and no cargo could be discharged before the Governors had come down.

In 1684 two inspectors of merchandize were sent from Yedo.

In 1687 three Governors were appointed, of whom two lived in Nagasaki, each taking his turn to be relieved by the third, who resided in Yedo.

In 1700 there were four Governors, two of whom resided in Nagasaki and two in Yedo.

In 1635, on the occasion of the escape of Kintsuba Jihei, a Japanese Bateria, and one of the most influential of the Christian sect, guard-houses were erected at all the land approaches of Nagasaki, and persons without passports from the municipal authorities were stopped.

In 1636 the Shôgun's ministers issued an edict to the Governor of Nagasaki, the articles of which were to the following effect:—
Japanese not to go abroad.

Japanese attempting to go abroad to suffer death.

The cargo imported in a foreign vessel not to be purchased by one person.

Persons of military rank not to buy direct from Chinese traders.

Persons returning from abroad to be put to death.

The Prince of Ômura to provide a guard-ship from time of foreign ship's arrival until receipt of instructions from Yedo.

Foreigners propagating their religion to be imprisoned in Ômura.

Foreign ships to be inspected.

Half-breeds not to reside in Japan. (In accordance with this article, 287 children were banished to Macao.)

Persons adopting half-breeds to be banished, and their relations to be punished.

Nature of merchandize in foreign ship to be reported to Yedo.

Merchandize, excepting silk, to be sold by private arrangement.

Goods not sold cannot be stored in the country.

Agents of merchants to be in Nagasaki before the arrival of a foreign vessel; in event of their being five days late, they were not to share in the business or the proceeds.

Silk to be purchased by merchants of Yedo, Kiôto, Ôzaka, Sakai and Nagasaki. Value of goods brought to Hirado to be determined in Nagasaki.

In 1636 the Portuguese were prohibited from living in the town of Nagasaki and were removed to Deshima, a tract of land which had been reclaimed by twenty-five Japanese merchants. The object in secluding the Portuguese here was to prevent the spread of Christianity. They lived in Deshima for three years, until the autumn of 1638, when owing to the revolt of the Christians of Shimabara in the preceding year, they were expelled by Ôta Bitchiu no Kami and ordered never to return. For two years Deshima remained unoccupied.

The Dutch first received official permission to trade in Japan, on September 5th, 1608, when Iyeyasu issued an edict to the Dutch Captain, whereby Dutch ships were allowed to visit any port in Japan, and were in fact invited to come. On the 16th of September, 1617, Hidetada permitted Dutch ships in distress to visit any port in the country. The English received a similar permission.

From 1608 to 1638 the Dutch traded periodically at Hirado, and enjoyed freedom of action. In the latter year Matsudaira Idzu no Kami came on a visit of inspection, and destroyed the Dutch fort in Hirado, thinking from its size and strength it might endanger the peace of the country.

In the winter of 1640, when on the point of starting on their annual visit to Yedo, the Dutch were ordered to move to Nagasaki, and on their return, in 1641, they repaired there and took up their abode in Deshima.

In 1641 nine Dutch vessels entered Nagasaki, after which from seven to ten came annually. The annual value of cargo imported amounted to from 7,000 to 10,000 *kwamme* of silver.

From 1641-1671 the trade between the Dutch and Japanese was carried on without the intervention of the Government.

In 1664 the Dutch began to purchase *koban* at the rate of 68 *momme* each, the market price at the time being 56 or 57 *me*. In the course of four years 81,000 *koban* were purchased. The profit was divided between the people in the inner and outer town, but in 1666 it was divided according to the number of houses. Till the end of 1667 trade was carried on in silver currency, but owing to the latter becoming scarce, gold was substituted, one *koban* being reckoned at 56 or 57 *me*.

In 1672, a mode of trade called *shihô shôbai* was established. Upon the discharge of goods from a ship, appraisers, appointed by the merchants of Kiôto, Sakai, Ôzaka, Nagasaki and Yedo, resident in Nagasaki, drew up a price list of the articles of import. This was sent in to the Governor, who, with the Daikwan and Machi-doshi-yori, then forwarded a copy of it to the Dutch Captain, who agreed to sell such of the goods as had prices affixed which came up to his ideas. The merchants then tendered amongst themselves for the goods, the highest tender being taken. When the purchasers had taken delivery of their goods, the captain informed the assembly of merchants, from whom he received the price originally appraised. This practice continued until 1684. In 1685, unrestricted trade was again established, save only that the amount of imports was limited to 50,000 *riyô*, and that raw silk could be purchased only by certain Japanese merchants.

The value of the *riyô* was fixed at 68 *me*, the market price being 60 *me*: thus the Japanese received a profit of eight *me* on each *riyô*.

The chief articles of import were silk, of which about 1,000 *kwamme* of silver worth was imported, and piece goods, etc., about 2,000 *kwamme* worth.

Five per cent commission was levied by Government on each *tan* of piece goods and every *kin* of silk, and 50 *me* on every 1,000 *kwamme* of drugs and miscellaneous goods.

In 1603 the Portuguese imported a quantity of raw silk, but there were no purchasers. After waiting two years they applied to the Governor, who reported the matter to Yedo, whereupon the Government ordered certain merchants to buy it in proportion to their means. This occasioned the formation of a sort of silk guild, the members of which could trade in silk alone. But in 1654, the price of silk being very high, the merchants sustained a heavy loss and began to trade in other articles.

The dimensions of Deshima are:—

S.	118	<i>ken</i>	2	ft.	7	<i>sun</i> (a <i>ken</i> =nearly 2 yards).
N.	96	"	4	"	9	"
W.	35	"	4	"	6	"
E.	35	"	3	"	5	"

The houses (25 in number), godowns, etc., were built by the 25 Japanese merchants. The wall, gates and bridge by Government.

The rent paid by Portuguese to their Japanese landlords amounted to 80 *kwamme* of silver, but the Dutch refused to pay so much, and it was finally settled that they were to pay 55 *kwamme*, at the rate of 268 *me* 3 *fun* for each *ken* in a house.

From 1661 the Dutch left Deshima every year on the 14th of February with presents for the Shōgun, arriving in Yedo in March. Previous to this they had been used to start in January.

In 1662 a bazaar for the sale of Imari porcelain was opened at Deshima by permission of the Government.

From 1654 the temple grounds of Go-shin-ji were used as a place of burial by the Dutch.

The value of presents annually given by the Dutch to the Shōgun was 21,500 *me*; to Nishi no Maru (heir apparent), 10,750 *me*; and to the Court Officials, 33,020 *me*. From 1716 only two Dutch vessels were allowed to come yearly, and the value of imports was fixed at 30,000 *kwamme*. The export of copper was fixed at 1,500,000 *kin*. From 1744 the value of imports was reduced to 600 *kwamme*, and export of copper to 650,000 *kin*. From 1746 the value of imports was raised to

1000 *kwamme*, and 1,100,000 *kin* of copper and 1000 *riyô* of gold were allowed to be exported. From 1790 only one Dutch vessel was allowed to come.

The value of imports was reduced to 500 *kin* and the export of copper was 600,000 *kin*.

The Dutch Captain was to proceed to Yedo once in every five years, and the value of the presents was reduced by one-half.

After the edict of 1637, prohibiting their visits to Japan, the Portuguese and Spaniards made several attempts to renew their intercourse, but without success.

In 1639 the governor was dismissed for having sent a Namban vessel away without having reported her arrival to the Yedo Government. Three other vessels came in this year, and Inouye Chikugo no Kami was commissioned to order their immediate departure, and to state that a second infraction of the laws of Japan would be severely punished.

In 1640, on July 7th, a ship from Luzon arrived. It was seized and the crew were imprisoned in Deshima, 61 of whom were put to death at Nishizaki on August 3rd, and the ship with its cargo consisting of 60 *kwamme* of gold, gold ornaments and piece goods, was sunk off Sudzure in Nishidomari. Thirteen of the crew, who stated that they had come to Japan against their will, were spared and sent home on September 12th in a Chinese junk to inform their countrymen of the fate of their comrades and of the prohibition against the coming of foreigners. In 1663 the sunken cargo was presented to the Machi-doshiyori, who succeeded in raising over 45 *kwamme* of gold. On September 30th six Bateren and three Japanese were shipwrecked off the coast of Loochoo, conveyed to Satsuma and thence to Nagasaki, where they were imprisoned.

On July 26th, 1647, two Portuguese vessels anchored off Yuwôjima, with ambassadors from Goa, and asked permission to trade. On the 28th they entered the harbour and anchored off Minagi. They refused to give up their arms and ammunition, saying that they intended to return after they had presented their petition. On the 30th, Matsudaira Chikuzen no Kami arrived; he was succeeded by the *Karô* and soldiers of most of the daimiôs in Kiushiu. In consultation with the Governor, it was decided that a bridge of boats should be stretched

across the harbour from Ôgami to Megami to prevent the ships escaping. For the purpose of terrifying the foreigners, Sawada Kunaizayemon, a retainer of Ômura and a skilled horseman, is said to have appeared on this bridge on a powerful chestnut horse in full armour, brandishing a spear. In the course of a month troops from the various daimiates 30,433 strong, and sailors to the number of 19,795 assembled at Nagasaki and took up positions on the islands at the entrance of the harbour, on both shores of the harbour, and at Fukahôri. Never before in Japan had such an array of men gathered together to guard their country against foreigners. All the roads, too, leading to Nagasaki were guarded. On the 28th August Inouye Chikugo no Kami and the Governor arrived from Yedo, and presented Matsudaira with a letter from the Government recommending a lenient policy. The ships were, accordingly, suffered to leave on September 4th, and after a few days the troops dispersed.

The revolt of the farmers and peasants in Amakusa and Shimabara, which broke out in 1637, may be traced far more to the exactions of their tyrannical feudal lords than to the Government edicts prohibiting the exercise of the Christian faith in Japan. An ignorant peasantry, ground down by taxation to the lowest state of poverty and misery, rose rather to take revenge upon their hated masters than to defend the new religion, which they had in fact outwardly abjured. Many doubtless remembered the munificence of their Jesuit teachers in distributing alms in money and kind, their skill in healing the sick and their promises of eternal bliss in a future world. They had heard, too, of the ease in which their neighbours in Nagasaki lived, and of the riches to be made by commerce with the foreigners. They longed to throw off their yoke. A pretence for revolt was wanted, and their leaders, a band of reckless *rônin* anxious for their own aggrandizement, and enemies of Iyeyasu, found it in Christianity. Pretended miraculous manifestations of the Divinity were made use of to incite the people, and they raised the standard of revolt in the name of Christianity and fought and fell beneath banners inscribed with the figure of God. They paid, however, a fearful penalty for their folly, and died most cruel deaths, refusing to the last to recant from a religion, to which the sheer hopelessness of their condition drove them to yield a blind belief.

The following is a brief outline of the rebellion. It is needless to remark that the accounts given by Japanese authors are highly embellished and the figures grossly exaggerated.

The Nanushi of the village of Oyei, in Amakusa, one Oyei Jihei, had concealed in his house a picture of Jesus Christ, which was stolen by Gensatsu, mounted by Akaboshi and secretly hung up before his (Oyei's) private altar. Oyei was at heart a Christian, and being delighted at what he thought to be a divine manifestation, summoned Gensatsu and the neighbours, who all bowed down before the picture. As the news spread, the villagers round about assembled to the number of 4000 or 5000. Mikae Toyemon, the retainer of Terazawa Hiôgo no Kami, in charge of the castle of Tomioka, ordered the people to disperse, and upon their refusal, some of his men tore down the picture and trampled upon it. Their temerity cost them their lives. Oyano, Chijiwa, Ashidzuka and Akaboshi, some of the ringleaders of the plot, then summoned to Oyei's house the Nanushi of the neighbouring villages, and advised immediate revolt and the seizure of Tomioka. Whereupon leaders were chosen, and ten white flags adorned with the picture of God were got ready.

On October 1st, 1637, 8,300 men and 1,000 women with 300 stand of arms assembled at Oyei Mura. Shiro Tokisada, son of the Nanushi of Hara Mura, in Shimabara, was chosen leader in chief.

Various miracles were wrought to please the people.

The plans Shiro laid before them were to seize Nagasaki, subdue Kiushiu, open intercourse with foreign countries, invite the assistance of a foreign army and thereby compel their lords to change the harshness of their rule, and, if they failed, to call on the name of the Lord and perish in the attempt.

On October 9th Haruda Iyo, in charge of Karatsu, landed at Hondo in Amakusa to assist Miake. The villagers falsely represented themselves as Buddhists, and led him into a trip, in which Haruda's men were set upon at night in the temple of Sai-hô-ji, and it was with difficulty that a few reached the castle. Ashidzuka, who appears to have been the leading spirit in the rebellion, recommended that they should cross over to Shimabara. Shiro, however, attacked the castle, but without success. Ashidzuka and other *rônin*, with 120 followers, then crossed to Shima-

bara, leaving Shiro behind with 10,000 men. There they were joined, at Hara, by Kozayemon, Shiro's father, and by most of the Nanushi and villagers of the neighbouring districts. The Government rice godown in Kami-Fukaye mura was seized, and 58,000 sacks of rice and 4000 sacks of *daidzu* were conveyed to Hara in one day in boats. Ashidzuka and others broke into the castle of Shimabara in charge of Matsukura Jimbei, and seized arms and ammunition, which were also sent to Hara, whither they all withdrew. Ashidzuka next directed 25,000 sacks of rice and other provisions to be sent over from Amakusa, and on November 7th Shiro, with 10,000 men, arrived at Hara. Including women and children, the rebels now numbered 40,200. In Hara was a castle once inhabited by a member of the house of Nabeshima, but deserted since 1601. It was supposed to be impregnable and capable of holding 40,000 to 50,000 men. The rebels repaired this and prepared for a siege. The Government in Yedo, upon hearing of the extent of the outbreak, were alarmed, and thought that a foreign army had come to attack the country. By the advice of Mito Chiunagon, Itakura Naizen no Kami, one of the ministers, was sent down with plenary powers. He arrived on the 11th December, and on the 31st the siege was commenced. The particulars of the siege are too intricate to be interesting to any modern reader. Attack after attack was made on all sides, resulting merely in the worsting of the Government troops. Itakura applied to Yedo for instructions. All the daimiôs in Kiushiu sent out men, bringing the number of the attacking force up to 160,000. Itakura's attempts having utterly failed, Matsudaira Idzu no Kami and Toda Samon were sent to command the troops, and arrived at Shimabara on January 18th, 1638. Itakura, hearing that he was to be superseded in the command, made a final attempt, which ended in the rout of his men and himself being shot.

Matsudaira made but little progress, although it was evident that the besieged were short of provisions. On 10th April, Hôjô Awa no Kami came down from Yedo to consult with Idzu. He advised immediate action, and persuaded Nabeshima Kai no Kami to attack the *Demaru* without orders from Idzu. Kuroda Sayemonosuke and Nagaoka Kemmotsu, the leaders of the van of Hosokawa Etchû no Kami's men, made a simultaneous attack on the *Ôte* and *Nakate* respectively. Breaches

were now made in the castle, and the besiegers poured in and drove the rebels to the *Honnaru*, where they were utterly defeated, the finale being a fearful massacre of men, women and children.

The castle fell on April 12th, 1638, about seven months after the breaking out of the revolt and after a siege of 102 days. Hôjô Awa no Kami and Nabeshima Kai no Kami especially distinguished themselves.

Kozayemon, Shiro's father, was crucified at Nagasaki, and Shiro's head was exposed at the Ôhato (Great Pier) for seven days as a warning to the people. The heads of those who were decapitated were buried at Nishizaka, a suburb of Nagasaki. Their grave is called Arima tsuka.

For their misgovernment Terazawa was stripped of all his domains but Amakusa, where he finally committed *hara-kiri* owing to the intense hatred the people bore him, and Matsukura Kai no Kami, Lord of Shimabara, was permitted to disembowel himself.

Previous to the edict of 1636, prohibiting Japanese from going abroad, they had been in the habit of visiting Tonquin, Annam, Taiwan, Luzon, Macao, Cambodia and Siam.

It may be mentioned that Japanese first went abroad for the sake of commerce in 1592, when Shirayama Kozayemon of Nagasaki having received permission from Hideyoshi to go abroad, and having built a junk at Kiyôdomari in Satsuma, went to Annam.

In the period Keichô (1596-1615) Tsuda Matazayemon went to Siam. That country was at war with 哥阿 a neighbouring tribe (?) and, as the Siamese were being worsted, Tsuda and Yamada with 600 or 700 Japanese, who were living in Siam at the time, assisted them. The King, as a reward, gave Tsuda his daughter in marriage and appointed Yamada to some high office. In the period Kwanyei (1621-1644) Tsuda returned to Nagasaki and was made the Otona of Zaimôku Machi and afterwards Siamese interpreter. He brought with him from Siam a tree called Shaku Sendan (*Melia Azedarach*?) and an image of Buddha. The tree was divided into three parts, one being given to Nabeshima, Lord of Saga, one to Heizô, and the third part used for the image of Buddha in the temple of No-nin-ji.

In 1622 Araki Satarô went to Annam and had an audience with the King. He married the King's daughter, and received a document

containing the royal recognition of his relationship. [The original of this document was given to the Governor in 1681, and exhibited at the exhibition in Nagasaki last year.]

In 1623, Hasegawa, the Governor of Nagasaki, wrote to the King of Chaban (?), forwarding 20 *krumme* of silver for 100 catties of aloes-wood, and requesting that better samples and full weight should be sent in future. As a mark of friendship he presented the King, in the name of the Shôgun, with a sword, and his consort and sisters with two dresses each.

In this same year, Itakura Suwô no Kami received from the King of Siam a present for the Shôgun of two elephants' tusks and four pieces of white *nuno*. In return he sent from the Shôgun a pair of gold screens.

In this year, also, Hasegawa sent a letter to the Governor of Luzon, thanking him for having sent an envoy to Japan, and presenting him with two swords.

On July 9th, 1656, an ambassador from the King of Siam arrived with presents for the Shôgun, and asked permission for his countrymen to come periodically. This was refused and the presents declined. Some time after, however, the Siamese were allowed to trade at Nagasaki. Chinese acted as interpreters.

In 1605, Arima of Shimabara sent a vessel to Annam to buy aloes-wood. She was driven by bad weather to Macao, and whilst undergoing repairs, the sailors quarrelled with the Portuguese, who killed 50 of them and seized the treasure on board. On board a Namban vessel which arrived in June, was a Japanese who had seen the fight, and who reported to the authorities that the Portuguese who had killed the Japanese were on board another vessel then in port. Arima had received permission from the Government to burn this ship, but the Christians warned the captain of his intention, and the vessel weighed anchor and left with north-east wind. Arima, persued her to the east of Yuwôjima, where she anchored. A south wind sprang up and fire-ships were sent against the vessel. She was destroyed on the 18th of December, 1609. Her cargo consisted of silk, treasure, embroidered stuffs, chains and bracelets.

In 1641, two guard-houses were erected at Nishidomari and Tomachi. Two daimios from the neighbouring provinces took each his turn to be on guard in the 4th month of every year. The men on guard numbered 1,000 and were changed every 100 days.

In 1648, naval and military equipments were stored at the guard-houses, and a complete staff of officers, soldiers, sailors and watchmen was kept up.

Another guard-house was established at Fukabôri, and the *Karô* of Nabeshima provided a contingency in case of necessity, the captain of the guard being sent yearly from Hizen.

After the Shimabara rebellion, Matsudaira Idzu no Kami was ordered to inspect places in Nagasaki suitable for coast-guard stations and signal fires. Look-outs were established at Nomo, Kosedo and Hôkwazan. That at Nomo was situated on the top of Hinoyama. Two boats, manned by five cars each, with the words "Nomo imperial reporting boats" on the sails, and with masts painted black in the middle and white at each end, were attached to it. Two men were on watch twenty days each throughout the year. When Chinese vessels left, four were on duty. When a foreign ship appeared, she was signalled at Nomo, the signal being taken up at Kosedo and passed on to Jiuzenji Mura (the present Jiu nin Machi), and thence to the Governor's yashiki.

In 1689, a look-out was erected at Kosedo. Ten watchmen, ten sailors and four boats, painted similarly to those at Nomo, formed the complement of the guard.

In 1641 a look-out was erected on Hôkwazan and provided with two farmers, who were changed every ten days. Upon the farmers objecting to this service, Heizô appointed men of his own retinue in 1659, and after Heizô's banishment, Government officials were appointed. A signal fire was kindled on this mountain in case of danger: it was taken up by another on Taradake Yama and thence on to Yedo. In October, 1764, the watch on Hôkwazan was abolished. After this in 1808 a guard-house was erected below the old place.

In 1799 guard-houses were erected at Ichôyama and Ushibuka in Amakusa.

In 1653 or 1655 seven forts were built by Matsura Hizen no Kami

—three within the harbour of Nagasaki, at Odawo, Megami and Kozaki, and four without it, at Shirasaki, Takaboko, Naginata and Kagenowo (the two last on Koyagi Island).

Chinese traders had been in the habit of visiting Japan from very early days: their visits became less frequent in the time of the Yuen dynasty. During the Ming dynasty both Japan and China were troubled by internal dissensions. The dwellers on the sea-coast of Kiushu took advantage of this state of lawlessness, and having crossed over to China, ravaged the coast and committed all sorts of atrocities. On the sails of their ships were written two characters meaning Hachiman, and owing to this the Chinese called their vessels "Bahan-sen," "Bahan" being the Chinese sound for these characters and "sen" of course meaning ship. Intercourse between the countries was in consequence partially broken off by order of the Chinese Government, the only Japanese vessels allowed to visit the ports of China being those licensed by Ochi Yoshitaka.

At the restoration of peace, in the beginning of the reign of Iyeyasu, Chinese junks came and traded at Kagoshima, Bônotsu, Kiyôdomari, Kuchinotsu, Yokose Ura, Ômura, Karatsu, Hakata, Shimonoseki, Waka no Ura, Sakai, Anotsu, Nambu, Kadzusa and Nagasaki; but in 1636 they were forbidden to trade at any other place but Nagasaki.

Upon the arrival of a Chinese junk, some of the merchants of Nagasaki went out to Kolaki to meet her and to make arrangements about the landing of cargo and the lodging of the officials and crew. As an inducement to make the townspeople recant from Christianity, Hasegawa, when Governor, allowed them to lodge the Chinese, and charge a commission on the cargo, which amounted to 10 per cent of the value of general stores and one *momme* per *tan* of piece goods. In 1633 this commission was reduced by one-half.

In 1636 the inspection of the cargo imported in Chinese junks was introduced.

The following appears to be the mode in which trade was carried on between the Chinese and Japanese. Certain streets took it in turn to control the trade. Merchants sent in their tenders to the *Otona* of the street, the average of the three highest tenders being held to be the price at which the goods were to be purchased. The Machi-doshi-yori

reported the price appraised to the Governor, who informed the Chinese. In case of the latter refusing to accept this price, their goods were sent back.

In 1672 the *Otona* of Uchinaka Machi and Zaimoku Machi were ordered to receive tenders, but disputes having arisen between the merchants, the system of general tendering was abolished, and twelve of the most influential merchants of Kiôto, Yedo, Ozaka, and Nagasaki were chosen to tender on behalf of the merchants. As before, the average of the three highest tenders was taken, and held to be the rate at which the goods were to be bought.

In 1666 the Chinese were not allowed to lodge where they pleased, but only in the street whose turn it was to control the trade.

The entrance and clearance of Chinese junks were first registered in the time of the Government of Takenaka Uneme (1629-1632).

In 1602 Chinese were permitted to bury their dead in the grounds of Go-shin-ji, at Inasa, and this formed the precedent for the burial of foreigners there.

In 1688-1704 a settlement for Chinese was formed at Jiuzenji Mura, which they could not leave without permission. Three Chinese temples were built for the burial of the dead. Priests were sent for from these temples, and festivals, which were formerly held at Go-shin-ji, came to be held in the settlement. Yearly subscriptions, however, were still paid to Go-shin-ji, and burials took place there now and then.

It may be interesting to know that by an order given to the Dutch and Chinese interpreters on May 4, 1668, the import of the following goods was prohibited :—

Trees and plants (except those used for medicine).

Vermilion.

Living animals.

Articles de Paris.

Gold lace.

Coral.

Foreign clothing (except flannel and woollen clothes).

Red oxide of lead.

Dutch Magemono (round boxes?).

Aloes-wood.

Also that by an order dated 16th September, 1715, the following articles were prohibited to be exported :

Gold.

Silver.

Gold and silver ware.

Arms and ammunition.

Portraits of warriors.

Swords and razors.

Edged tools.

Sulphur.

Oil, etc.

Lacquer.

Money coined in Kwanyei.

Rice, wheat, millet, brans and sorghum (except what was required for ship's use).

Silk.

Pongee.

Light silken fabrics.

Grass cloth.

Floss silk.

Ginned cotton.

Raw cotton.

Hemp.

Portraits of the Emperor, officials in full dress.

Obscene pictures.

Pictures of battles or strategic movements.

“ “ camps and castles.

I will conclude this paper by giving a short account of a visit paid to Nagasaki by an English man-of-war in 1673, and by a Russian man-of-war in 1804.

On July 9th, an English man-of-war, carrying 10 guns, arrived at Nagasaki, and produced a letter said to have been given by the Japanese Government about 44 years since to the captain of an English ship which had touched at Hirado. Upon examination it was found that this document was without any official seal.

. In reply to enquiries, the captain said that war between England

and Holland, and the idea that small profit would accrue to them if they were to trade with Japan, had prevented their visiting the country for some forty years; that now their country was at peace with Holland; that they had no Portuguese on board, nor any articles of church furniture; that their religion differed from that of the Portuguese and that they were willing to give up their arms and ammunition during their stay. The Dutch told the Governor, with a view of influencing him in his report to Yedo, that the English King had married a daughter of the King of Portugal, and that friendship existed between the two nations.

The English said they left England in November, 1671, in company with two other vessels, and arrived off Bantam, in Java, in April, 1672, where they remained 40 days; that one ship went to Tonquin, whilst the other two arrived at Singapore in June; that one of these then returned to Bantam, her cargo having first been transferred into the vessel bound for Japan.

The vessel anchored off Nishidomari. Five guard-ships and two ships with *Chaji* on board were appointed to watch her movements. Permission to trade was refused, but as they were short of provisions they were allowed to sell some of their goods. These realized 348 *riyo* 3 *bu*, 260 *riyo* 3 *bu* of which they spent in purchasing provisions, etc.

On October 9th, 1804, a Russian ship with four shipwrecked Japanese on board visited Nagasaki. She anchored off Yuwôjima and afterwards at Ôdawo. The Russians said they desired to offer presents to the Shôgun and to make a treaty of friendship and commerce. Nabeshima kept guard over the ship with seven large and a number of small boats, while the Lords of Hizen, Chikuzen and Ômura guarded the approaches to Nagasaki by land and sea. On the 30th they were allowed to live on shore. In December a house was erected in Megasaki where 19 Russians (the Envoy and his staff) and the shipwrecked Japanese lived for 17 days. People were not allowed to look at or associate with them. On 5th March, 1805, seven Russians proceeded in a boat from Megasaki to Ôhata, and thence to visit the Governor at Tateyama yashiki. The roads through which they passed were hung with curtains on each side to prevent the Russians seeing or being seen.

The Governor informed them on the 6th, when they visited him again, that Holland, Korea, China and Loochoo were the only countries with which Japan had intercourse and that he could not receive their presents. Floss silk and rice were given them.

On the 9th the Government received the shipwrecked Japanese, and on the 10th the ship left.

The above notes will doubtless strike readers as being somewhat disjointed, but the confused mass from which I had to extract the information rendered this almost unavoidable. On a future occasion I hope to be able to supplement them by a more detailed account. I have endeavoured to put my gleanings into as readable, consecutive and condensed a form as possible, and trust they may not be quite devoid of use or interest.

LIST OF AUTHORS CONSULTED IN MATSURA TÔ'S COMPILATION.

Nagasaki Yawagusa.

- do. Shikô.
- do. Dzushi.
- do. Jikki.
- do. Riaku-genji.
- do. Nikki.
- do. Go Yô Kibutsu Shoku.
- do. Ki.
- do. Yengi Riaku.
- do. Yengi hiyô.
- do. Nukigaki.
- do. Kagami.
- do. Kagami Hikaye.
- do. Shugai.
- do. Irai no Oboyegaki.
- do. no Shoki.
- do. Jitsu Roku.
- do. Shizoku Hen.
- do. Shichiu Meisai Roku.

Kiyô Riakki.
Amakusa Seibatsu Ki.
Kôyei Kemmon Jikki.
Takatani Uji Nen rai Ki.
Seikoku Tsushô Sambutsu Riakki.
Matsumai Sekijin Ikken Kikigaki.
Araki Uji no Ki.
Kwambun jiu san nen America Sen niukô Nikki.
Tenki Rei-ô Ki.
Hizen Fu-do-ki.
Wa-ji-ga.
Sai-ran-i-gen
Tenshô Ki.
Kwai-tsû Shô-kô.

A MEMORANDUM ON THE COLEOPTEROUS GENUS
DAMASTER, WITH NOTES ON SIX SPECIES
OR FORMS IN IT.

By GEORGE LEWIS.

[*Read March 8, 1881.*]

From an entomological point of view, the fauna of Japan is extremely interesting to the naturalist, as the country is sufficiently removed from the Continent of Asia to preserve any peculiar forms which may arise in it, and we thus find in the insect-world of the islands a fair amount of endemism. Added to this partial isolation is the geographical position of the islands: they cover in latitude 12 degrees, while the main island at its widest part scarcely occupies four degrees of longitude, and this gives a great variety in climate, with many local influences arising from it. In all parts of the world, apterous forms of life exhibit more local peculiarities than flying ones—for insects fly many hundreds of miles, and thus distribute themselves over large areas, and where immigration is easy, affinity in form usually prevails.

In Japan there is a large apterous beetle of singular shape called *Damaster*. It is allied to *Carabus*, a genus found throughout the whole of the Northern Hemisphere, but *Damaster* is peculiar to Japan, and will afford therefore an excellent type for studying the way species are modified by climate or by the local results of thermal change. In the genus there are some half-dozen species, all differing *inter sese*, and they are distributed throughout the length and breadth of the land. We are justified, I think, in attributing the changes in form and colour, which together constitute the several species, to the causes mentioned here, for we cannot well believe that the variation results from the intrusion by migration of insects from other lands, with which they might interbreed. In Nagasaki there is a long, sub-tropical summer,

with little change in the temperature from day to night, and the latitude gives little or no twilight. Here we find *D. blaptoides* Kollar, measuring nearly 2½ inches, black in colour and nocturnal in habit. It lives under the shade of large evergreen trees, and we can imagine that the sun rarely shines upon it. Crossing the Bay of Shimabara, adjacent to Nagasaki, we leave a half-clayey, half-granitic soil for a sandy one with small conifers, and there is a volcano of sufficient altitude as to be in winter sometimes topped with snow. Here the climate changes enough to have its effect on our genus *Damaster*: The trees of the locality are small, owing to the soil, and are easily penetrated by the wind chilled by the mountains in winter, and by the sun in summer. We find here *D. Lewisi*, Rye, a half-starved form of the Nagasaki species. It measures 1 inch 8 lines, has shorter legs, and (observe!) a bluish tint is visible in some examples. The country between Shimabara and Hiôgo is unfortunately unexplored, but in these two districts there is no difference in soil and apparently none in vegetation or climate, for although the difference in longitude is great, a degree and a half will cover the space in latitude. In Hiôgo the Shimabara form of *Damaster* is found. Yokohama is our next district, the neighbourhood of which has been worked more or less by entomologists since the opening of Japan. The species here is *D. pandurus* Bates, a slightly modified form of the last. The thorax is shorter, the general outline less elegant, and the individuals more constantly blue. Indeed, in the higher regions about Nikkô, to which place the species extends, I have procured examples with *metallic* blue thorax and elytra. These bright specimens came from altitudes where, on the 15th June, snow remained under the trees, and where in the end of September birch trees had lost all their foliage.

At Akita and on northward to Awomori there is another species, *D. viridipennis* Lewis, which has a bright crimson metallic head and thorax and elytra green, somewhat obscure on the disc, but brightly metallic at the margins, and it is in fact one of the most highly coloured of Coleoptera in Japan. Now the climate of this district is many degrees colder than that of Nikkô, especially on the west coast, for there the full strength of the northwest wind—the cold wind in Japan—is felt, and prevails generally throughout the winter, and under these conditions we

find the brightest species in the genus. In Yezo there is *D. rugipennis* Motschulsky. It has the thorax nearly as bright as the last, with deep purple-coloured elytra, and in the south it is also about the same size, but a specimen obtained from Cape Soya measures only an inch in length.

The climate of south Yezo is more severe than that of the north of the main island. In Satporo, during the winter of 1878, the mean temperatures for January and February were 21 and 25 degrees Fahrenheit respectively, but we need not insist much on the qualifying tendency of this inclemency, for the ground is covered with snow throughout the winter, and this would have a very genial effect on both animal and vegetable life. The summer of Yezo gives a mean of 65° Fahr., which is probably very little less than that of the Akita district.

Now we have traversed the main islands, tracing *Damaster* from the south to the north without finding in any one locality two species of the genus, and without finding any one limited to a small district only. The species which are found occupy wholly the area to which they belong, and these areas are sufficiently extensive to give to each one a fair range. In concluding our researches, the question naturally arises:—Are there any insular forms? Do any of the islands off the coast possess *Damasters* different from the type? In Sado there is a fine species allied in colour to *D. pandurus*, but which is otherwise very distinct. It is remarkable for the great crassitude of its head and thorax, and I have named it *D. capito*.

From these notes can any inductions be drawn which bear on the variation we see displayed in the different members of the genus? As *Damaster* becomes separated from the parent type in the south, and we follow it from the temperate to the colder regions, it gradually decreases in size. And diminution is a common feature in nature under like circumstances, for as we ascend a mountain we see a stunted growth in plants which at a lower altitude give out vigorous branches. Experiments prove also that light checks the development of growth in vegetation, and perhaps the same result might be obtained from trials in the animal kingdom, for *Damaster* is smaller as it becomes diurnal. More can be said regarding colour. The species in travelling northward lose the warmth of the sub-tropical summer, while from

being nocturnal they become diurnal in habit, and thus rejoice in the temperature essential to their nature and well-being. When for the first time we meet with colour, we still have a night-roving creature, but we have entered the region of twilight, and most likely *D. pandurus* is crepuscular, or even perhaps diurnal in the early days of spring. *D. viridipennis* and *D. rugipennis*, the bright coloured species, are clearly both diurnal, for I have taken them on several occasions crossing the path in broad day-light, or feeding on the exuding sap of trees at noonday. When also we consider the mountain varieties of *D. pandurus*, how that metallic colour appears in them while the valley specimens are black, it is naturally suggested to us that they see more daylight than those inhabiting the warmer valleys. We are accustomed to see bright-coloured insects glistening in the sun, and to observe the more sombre ones appear at night. The gay butterfly at noon shows a great contrast to the dusky moth which visits the lamp, and this is explained by one of the laws of natural selection. The males single out the brighter-coloured females, while the females favour the brighter males, and this in a long series of races perpetuates the very pleasing result we all observe in nature when we admire the colours of diurnal insects. There is, I think, little doubt that in *Damaster* colour has gradually appeared from a dark species. The eye in nocturnal insects is a highly developed organ, but it cannot be adapted for especially catching colour, for colour itself is dependent on solar rays; as for instance the scarlet geranium looks black as night closes in, and could not attract a moth by its brightness nor by any great contrast it might show to the surrounding vegetation. We may think that in twilight or moonlight we perceive colour in the landscape, yet it is impossible to define or represent the obscure hues. When light is absolutely excluded from the life of an animal, the eye becomes altogether obsolete, and there are many instances of this in cavern insects. But why has it been assumed that all the members of the genus have emanated from the south, from *D. blaptoides*? Because as truly as we see diurnal insects as a rule are bright, so we observe throughout the whole range of the insect-world that the nearer we touch the tropics the larger the species become, and we also can often see this in individuals of the same species, by following it to its most southern range.

THE CAPTURE AND CAPTIVITY OF PÈRE GIOVANNI
BATISTA SIDOTTI IN JAPAN FROM 1709 TO 1715.

Translated from the 西洋紀聞 of ARAI HAKU-SÊKI, by the
REV. W. B. WRIGHT.

[Read March 8, 1881.]

On the 6th day of the 12th month of Boshi (the Rat), in the 5th year of the Hōei period (Jan. 16, 1709), I heard at the Sei-tei (?) that in the preceeding 8th month there was a wild man who had come and stayed in an island of the Osumi province. Except such words as "Nippon," "Yedo," "Nagasaki," and the like, his language could not be understood. He wrote on paper a number of circles, and pointing to them said, "Rōma, Namban, Roxon, Kasteria, Kirishitan," and so on. When he said "Rōma" he pointed to himself. The affair was reported to Nagasaki. When enquiry was made of the Hollanders, they said: "Rōma is the name of a place in Italy and belongs to the Lord of the Ten-shu-kiyō sect. Roxon, Kasteria and so forth we don't know at all. Also, when they asked men of Nankin, Ningpo, Amoy, Taiwan, Canton, Tonkin and Siam, they said they had heard that Kirishitan was the name of a corrupt sect, but they did not know anything more. The government told this to me. When I heard this I said that I could not understand the fact of his language not being comprehended. The authorities once more asked why. I replied, "I have heard and remember what men of old said, viz., 'as the men of that country understand very well the tongues of all lands, in former times when the southern barbarians first came, as they were able to understand very well the languages of our country in five or six days' time, at last they also

preached their doctrine.' That doctrine was spread abroad in this country, and for many years the men of that country were always coming and going. When their doctrine was prohibited, a great number of my countrymen who followed that teaching were sent over to that land. Therefore the men of that country perhaps will understand the language of this land very well. If those who come seeking anything in our country did not understand this language, how will they accomplish their desire? But as the languages of the Five Parts are not the same, and among them are ancient words, I don't know to what part of our country the language they have learnt may belong. As it is nearly a hundred years since the men of that country have ceased to come here, in the language of that time there will be differences from the present mode of speech. If we tell the Roman's words to men who know those old words, his words will not be beyond comprehension. I don't understand what the Hollanders mean. Again Roxon from the time of the Sô and Gen until now being written Roson, jars that have come from that country are thought convenient by my countrymen to keep tea in, and the name of Roson jars is understood by every one; and Kasteira being a country near the land called Italy, formerly there was a time when cakes made and sent from that place were brought here, and now, too, there are such cakes. These things even such as I understood, when I heard. Then is it not very absurd that men of those parts should not be able to understand?" So I said, and the government thought so too. Then I heard that that man, in accordance with the law of Nippon, must be punished. The year passed over. As on the 10th day of the 1st month of Kichi in the 6th year (Feb. 19, 1709) there was court mourning (for Iyenobu), this matter could not be heard. That year also came nearly to an end. In the beginning of the 11th month of last year the government said: "The foreigner who came to Ôsumi will soon arrive here. You must investigate the cause of this affair." Also they copied and sent to me the letter sent from Kagoshima last year to the officials of Nagasaki. The reason of this was, that they did not yet know the cause of his having come to Japan. Again, as what I said was previous to this, they summoned me to the Shôgun to cause me to make enquiries. And if it were only the Nipponese language, I could have understood his language a little, but

as the names of places and men, and that doctrine had many peculiar sounds, and this doctrine was prohibited; as there were things not understood, too, by the Hollander interpreters, truly this matter is difficult. With respect to this, as I thought there might be some translations of these words in the commissioners' office, I said, "If there are such books, be so good as to lend them to me." The officials were ordered to do so, and three books came from the office. When they had lent them and I looked into them, the principal doctrines of that religion appeared, but those words were not translated. But in them were one or two things not unworthy of attention. So then having heard that that man was come, they summoned him on the 22nd day of the same month to the commissioners' office. On the previous day I met the officials of the commission, Yokota Bitchiu no Kami and Yanagisawa Hachirōzayemon, and made an appointment about this matter. On that day, just after the hour of *mi* (11) I went to meet him there (Kirishitan Yashiki is at Koishikawa), and having met the commissioners, I saw the things he had brought with him. I saw money newly coined in this country and vestments made of white linen, and on the back a red stamp with the name of Nara in this country. As I showed them also to the commissioners and others, there could be no doubt. Though they thought it so strange as not to be able to understand it, having all finished looking they called the interpreters, who had been sent from Nagasaki with this man. (The chief interpreter was called Imamura Genzayemon Hidemari, the assistants Shinagawa Heijirō and Kafuku Kizō. I don't know the *proper* names of these two.) When I saw these men I turned to them and said: "Please say to the commissioners, 'Formerly, when the Namban came to Nagasaki, there were interpreters of their tongue in Nippon, and before that religion was forbidden by law, there were also interpreters; but since those men have all died, there will not be any who understand this branch of learning. Much more, from the commencement of the prohibitory laws, even by mistake to have spoken of these matters invites severe punishment. Although people may have heard and known them, they do not speak at all of them. So then as 70 or 80 years have passed away, there won't be any one who can know that language. As the languages of the Five Parts are not the same, for example now, if we spoke the Mutsu dialect to a

Nagasaki man there would be many words not understood. But while this is so, yet because they are all our mother tongue, if we suppose 'that' to mean 'this', even if we are not certain of all, we have a general notion of the meaning. If I look at the map of the world, Italy and Holland are within the same continent of Europe, and not so far separated as Nagasaki and Mutsu. Therefore if we suppose that you speak with the Dutch language to an Italian, seven or eight words out of ten will be understood. But when you are speaking on behalf of government, it won't do to speak by conjecture: you must learn to speak correctly. The present mode, too, is different from former modes of speech. Now we don't use the former mode of public speaking. Since it is necessary for me to understand this man's language, even though the interpreters don't understand all his words, yet let them make a conjecture and tell me, and I also, thinking that their words correctly agree with the meaning of his words, will accept and use them even though I don't understand. Therefore in conjecturing their meaning, though they should mistake them a little, it will be no crime. Of course as they have not studied this language, although there may be some things not understood, please don't blame this.' " They replied that they agreed with all this. When it was past three o'clock he was called out, and two men, one at each side, kept guard, and he saluted the persons present. They ordered him to sit down, and then the commissioners came to the side of a table. (That house faced the south and there was a wooden verandah; the table was placed three feet from it. The commissioners sat near the verandah, but I sat a little in the rear. The chief interpreter was on the west side of the verandah. The assistant interpreters knelt on the east side. As the Roman had come from a distance in a *norimon* he could not walk; therefore even in coming from the prison he came in a *kago*. Therefore, too, the two men held him up by the armpits. When he had sat down by the table, one horse-soldier and two foot-soldiers were beside and behind him, and knelt on mats. The rest of the arrangements were similar to this.) His height was over six feet; he was taller than ordinary men, his head the shape of a censer, his hair black, his eye deep set, a high nose, and he wore a brown stuffed small-sleeved Nipponese pongee silk robe. This garment he had received from the Lord of Satsuma. Next

the skin he wore a white calico shirt. (When he sat down he made the ceremony of the sign of some letter with his right hand on his forehead, and afterwards he always did the same. I have written the shape of it at the end of this book.) So then the commissioners spoke to the Roman through an interpreter. When they did so, he made an obeisance and replied. Then the commissioners said, that as the weather was very cold they wished to give him a garment; but he would not receive it. The reason was, as I heard, that he was not allowed by the rules of his religion to receive from any but disciples. "But since such like as food was necessary to sustain precious life that he might accomplish the commands of his King, it was quite enough to receive the benevolence of this country by eating its rice! How could he oppose this rule of his religion and receive clothes? As he is wearing a garment which he received at first in Satsuma, he is not cold, and they must not distress themselves." After this talk was ended, all the commissioners saluted me and bid me sit down beside them. And that day I made no other enquiries except that I bid the interpreters ask as to the condition of the Roman country, and heard the Roman's reply. (I brought the map of the world and enquired the state of the various countries. This map, being made in Japan, was not precise; but as I had heard that there was an old map in the commissioners' office, they promised to bring it.) When they asked him about this matter, I found that it was not so difficult to understand as I thought it would be. Only, as his words were a mixture of the dialects of the Five Parts spoken with his native accent, though I thought the words were so and so, I had some doubts. He also, thinking we did not understand him well, often repeated the same words over, but there were a good many mistakes in his talk. And moreover, he pronounced the names of those places and persons according to the manner of his country, but enquired carefully, and distinguished the names well, and as the interpreters had learned the Dutch language well, he taught them to pronounce what, led by former habits, they could not pronounce as the Roman did. Also after one hour of questioning I myself conversed with him. As it was now evening I informed the commissioners that I would come again, and then was about to return home. Just then the Roman, turning to the interpreter, said: "The cause of my coming to Nippon is

to respectfully teach my doctrine and thus benefit all, and save men. But since coming to Nippon, I have caused trouble to many, which distresses my conscience. Since I arrived here, this year has nearly ended. The weather is cold; the climate, too, is severe and snow will soon fall. It is truly a source of sorrow, that men, beginning with these Samurai, should have to guard me day and night. I suppose the reason of thus guarding me is from the fear that I may run away. My coming without fear over many thousand miles of wind and waves, is that at all hazards I may come and tell the message of my Lord to Nippon. I have come by my own desire. And so I shall certainly not leave and go elsewhere; and though I ran away, I could not stay one day in a place unknown, as I am not like the men of this country. But if you are guarding me by the Shôgun's command, it would not be right to be negligent in this. The daytime does not matter, but as the night is truly miserable for the guards, put on manacles and fetters and place me bound in the prison. If you should do so, the night guards will be able to sleep. Please mention this to the commissioners." When the commissioners had heard this, they thought it very frightful. I said to them: "I should not have thought him so deceitful;" and the prisoner having heard me, and seeming to dislike me very much, said: "It would be shameful for any one not to speak the truth; much more since there is a special commandment of my religion with respect to telling lies. From the time I came to understand the principles of this religion until now, I have not told any untruths. Notwithstanding, how is it that you have said such a thing of me?" I asked him, "In what you said now, did you say, 'the year being nearly over and the climate cold, it is unendurable to see these guards having to keep watch day and night'?" "Yes," he replied. "If so, then, I think you spoke deceitfully, because it is considered very important, and is by command of the government; and since the commissioners have received orders and so commanded you to be guarded, as they are anxious that nothing untoward should happen to you, inasmuch as your clothes are thin, they wished to give you clothes, but you won't receive those garments, If it is as you now said, why do you cause them such anxiety? If you don't care on account of your religious rule, why is it that at all events you don't care for the sake of those who are in charge of you? There-

fore if what you said now is true, what you said before is a lie. Anyhow explain to me what is your meaning." He replied : " Since I have heard your words, I think that what I said before was a mistake, therefore I will receive the garment, and set the commissioners' minds at rest," The commissioners were glad that he had spoken such a good thing. The Roman, turning again to the interpreter, said : " If it is all the same, I humbly wish not to receive silk robes,—Only cotton ones."

As it had grown dark during this talk, they took him back to prison, and I, too, went back to my house. On the 25th evening I called the interpreters to my house, and asked some things I had not understood the day before. Again on the 25th I went there and met the commissioners, and we summoned the Roman once more. On this day the map of the world that was in the commissioners' house was brought, and I inquired many things about Rôma and rather in detail. He said : " This map was made more than 70 years ago, and even at Rôma there are not many like it ; but in some parts it is unfortunately frayed and torn. If these were mended, it might be handed down to the future." This day we spent in converse from 10 a.m. to 2 p.m. and sent him back. That day he proffered his thanks a second time for the cotton clothes to the commissioners. I suggested that they should go and see the interior of the prison, and went as guide ; and when they arrived, they saw on the north side of the prison a house. Formerly the teachers of that doctrine who had returned to orthodoxy were put there. There were living in it an old couple ; as the commissioners came, they went out to meet them. These were the children of some criminals, and having become slaves thereby, were given as servants to some one kept here, and they had become man and wife. These had not received that doctrine, but as they had been servants to Christians from childhood, they were not allowed outside the prison. Well, they looked at that prison. It was large, separated into three by thick boards ; they had placed the missionary in the west room. He had cut red paper into the shape of a cross and pasted it on the west wall, and was reciting his prayers, so as to read them under the cross. To the south of this dwelling was another house. There the warders kept watch. After I had seen these things I returned home. On the 30th I went again. This day, as the commissioners said I need not

go with them, I did not go. We enquired more in detail this day what we had asked briefly some days before. So the day passed over. What we had enquired about before only related to his country. We had not asked the cause of his coming here, and the object of his religion. He used to explain the matters of his religion, whenever the words came up, but I made no reply. On the next day I said to the authorities, "Up to yesterday this man's examination has lasted about three days. Now I can understand his words without mistake, and I think that he can understand my words well. Henceforth I think it would be well to enquire the cause why he has come. If not, as assuredly his talk will be about the principles of his religion, perhaps the commissioners will come together and you will be pleased to order me to hear the reason of this matter." They signified their approval. I also told the commissioners and bid them meet. On the 4th of the twelfth month I went to the commissioners' office, and the commissioners also met there. They had him out of prison, and I asked him why he came to Nippon, and what doctrines he came here to spread. When I had done so, he rejoiced very much, and said: "Six years ago I heard that I was to come here as a messenger, and enduring many thousand miles of wind and waves, at last I have arrived at this capital. But as this day, if I lived in my own land, would be the beginning of New Year, a time when all men are rejoicing together, I think it truly a joyful thing that to-day, for the first time since I came to Japan, I am asked about my religion." (In that sect at Rôma perhaps the calendar may be different on the 4th of 12th month.) He spoke fully about his religion. His doctrine was different in no respect from what was in the three volumes lent from the commissioners' office. Only there were a few verbal differences, and the names of places and men were spelt differently, all the sounds being slightly altered. In respect of general knowledge and good memory even at Rôma he was considered very learned. In astronomy and geography the Nipponese could not come near him at all. I enquired as to the ancient matters at Roma, and he said: "There are many kinds of learning there; among these I am acquainted with 16." For example, as to astronomy and so forth, the first day I met him, as the day was nearly ended, I enquired of the commissioners, "What hour may it be? As there is no bell to

strike the hour in the neighbourhood, I don't know." Then turning his head and observing the position of the sun, and looking at his own shadow, bending his fingers, and calculating, he said: "In my country's fashion, it is such a division of such an hour, of such a day, of such a month and year." This was by the triangular sun-dial method, and appeared very simple to him, but I don't think you would say it was very easy.

Again, I opened the map of the world, made in Holland, and going through all parts of Europe, at last I asked, "Where is Rôma?" but as the names were written in small barbarian letters, even the interpreters could not understand. But he said, "Is there a Chiruchisusuya?" "There is not," replied the interpreter. "What is it?" I said. He said, "In the Dutch language it is called hassuru, in Italian compass." When I said, "I have one," and taking it out of my pocket gave it, he said: "This is not quite serviceable, because its point is shaky; but it is better than nothing." Seeing that there was in the map a measuring scale painted small, he took a pen, copied those numbers and using that compass, calculated the minute number. That map was on the table, his body on a seat in the garden, but stretching out his hand, he looked out a line drawn like a spider's thread on that small painted space, reaching with the compass a part his hand could not get to, so as to be able to count on both sides, and saying, "Be pleased to look here," he pointed with the compass to it. So when I looked, the point of the compass had stopped within a small circle-like the eye of a needle. The interpreter said that on the side of that circle the word "Rôma" was written. Besides this, I asked about Holland and all its provinces, and he knew them all without a mistake as before; and when we looked for Nippon in the map, and asked, "Where is Yedo?" as before, he said, "Here it is." And when we looked at the place, it was written "Yedo" in foreign letters. It appeared that these things were all fixed, but I imagine that if he had not been accurate in these things, it would truly be difficult to do. I said, "If I studied all these things, could I acquire them?" "Truly, they are easy," he replied. Again I said, "As I don't know mathematics well, perhaps it would be difficult." "By no means; even without knowing mathematics, you can learn it very easily," said he. And again he was very careful to show his

approval, even in small things. When he sat beside the table in the garden, he first folded his hands and made a bow, and with his right hand he made the sign on his forehead, and afterwards closing his eyes, sat down, but like a statue, without any movement. Whenever the commissioners rose up, he also stood up and made obeisance and then sat again. When they came back to their seat, he also stood and made a bow. Every day he acted in the same manner. Once, on seeing a commissioner sneeze, he looked at him and repeated a form of incantation, and then turning to the interpreter he said : "The weather and climate are cold. Can't you put on another coat ? My countrymen are careful about sneezing. Formerly, people in my land were everywhere seized with this sneezing sickness." Again, the interpreters using the Latin language, corrected the mistakes in his use of the Nipponese language. When they did so, he praised them highly. I having heard their words, laughed and said, "The interpreters have only imperfectly learned the Dutch language, and their old habits can't be done away, which are unlike the present mode of speaking. Of course you are used to our language." Again, as he could not say in our language the words, "In the Dutch men-of-war there are placed in the sides many weapons ; these are in three compartments—middle, upper, and lower, and they stick the great guns through the port holes," and even to say it by a figure was not very easy, I stretched out my left hand sidewise, and sticking out three finger tips of my right hand between the four fingers, I shewed them to him, and he said, "It is exactly so," and turning to the interpreter said, "It is very clever." Again when I enquired how far the country of Nôwa Oranda is from here, he did not reply. I asked a second time, and turning to the interpreter, he said : "In the great laws of my religion there is nothing more important than that about murder. How can I tell people and help them to find other countries?" When I heard his words, not being able to comprehend them, I asked through the interpreter, "How does he mean?" He said, "Even though I should know, I must not answer matters about those countries." Once again, when I asked his opinion, he said, "As I have only lately seen the people of Nippon, I don't know matters relating to Nippon, but if you were an inhabitant of my country you would do fine things. As Nôwa Oranda is not far from here, if this person should

desire to take that country, it would be very easy. Therefore I refuse," said he, "plainly to tell the way there or to show how to conquer any one's country." I heard this and felt sorry the commissioners too should have heard it, and said, with a laugh, "In regard to what I have now heard, even if I had that desire, as there is a strict law in my country, I could not send even one soldier there." All his examination was in a similar style.

When he came to speak about his religion, it appeared to be not in the slightest respect like the true way. Wisdom and folly became suddenly interchanged in him; at first I had thought him very intelligent, but when he began to explain his doctrine, he became like a fool; it was just as if one had heard the words of two men. At this point, though I knew that although that Roman learning is well accustomed to deal only with matter and mechanics, and is acquainted with things derived from matter, yet it is not acquainted with things above matter; yet I thought that perhaps the doctrine of the existence of a Creator may not be false. So then after that our talk ended.

I presented two volumes to the government, in which I had written the main points of our conversation. As it already had been distinctly determined, an order was given by the Shōgun to the commissioners to this effect: "The religion of Yaso has been prohibited in Nippon from of old. Now with respect to that Roman's coming here, since he says that he came here to complain that former messengers were truly not deserving of punishment, he must have come to bring letters from Rōma. However, he has come deceitfully without such letters to our land. Even if his words were true, we must regard the subsequent circumstances with suspicion. But since he says he is an envoy from his country, we must not put him to death. After this we shall wait for the production of testimony as to what he says, and deal accordingly." I thought to myself,—Hereafter, too, Romans will be continually coming here. Therefore, for the sake of the future, I wrote down all the circumstances of the present matter, said to the government that I would present it, and when I had written it, did so.

A little while after this the Shōgun died, and in the 4th year of the Shōtoku period (1714), the winter of Kōgo, the couple who were servants of the Yaso teacher who had conformed to orthodoxy confessed

openly. [This teacher's name was Kurokawa Jûan. I don't know well whether his true name was not Franchisuko Shûan; and the names of the servants were—the man, Chôsukey; the woman, Haru.] They said: "Formerly when our master was alive, he secretly taught us his doctrine; but we did not know that he acted contrary to the laws of the land forbidding the religion of Yaso, when he taught that doctrine." Now that we have become very old, we have seen how this Roman, not regarding his life for the sake of religion, has come many thousand miles, is captured and dwelling in prison, and loath as we are to lose the short span of this life, yet as it is a fearful thing to fall into the soul prison, we have received the doctrine from him and become believers. As it would be opposing the goodness of the government not to confess these things, we confess thus much. However it may turn out for us, we ask that we may be dealt with for our crime according to the laws." When they confessed, the commissioners separated the two from each other. The next year (1715), in the 3rd month, when the Hollanders came to Nippon, we interpreted the Roman's words. The crime of having secretly given instruction to the old couple in opposition to his former words was examined into, and he was bound in prison. Then he showed his real thoughts; raising his voice, he abused the commissioners, called out the names of the old couple, and strengthening their faith, ceased not day and night advising them to hold steadfast until death. The Hollanders who came this year said they had heard that Tomas Tetorunon, who went first to Peking, went there, but immediately returned to Rôma. The reason was, that when he came first to Peking, they heard that he could not remain because he was hated by the people of Peking. And now this man's coming to Nippon is perhaps unknown to his country people; but perhaps if we reflect, he may have committed some crime in his native land, and in accordance with the laws of the land was to be put to death; but having thought how he could expiate his crime, as he wished to come here and do something to be of advantage for his country, perhaps the Roman government thought, "If he should go to Nippon and bring about intercourse with our country, truly it would be good for us; and even though he should be killed in accordance with the law there, we don't care." The Hollanders said to me that it was probably in accordance

with that wish that he had been sent to Nippon. What the Hollanders said, too, was reasonable ; but I don't think it was so. In my opinion, they thought the period had arrived when the religion of Yaso, as they observed it, should be spread, and sent him to Nippon to try. If I am asked why, when I consider the gold and copper coins coined here which he had with him, I see that when I first heard of his having with him Ogon and other money and iron cash, he said : " In my country gold and silver is not sought for, but through the alms of all Europe plenty comes into the country." Also he said that " much gold goes out into the country of Roxon, and from all parts of Nippon much gold and silver goes forth and is taken by the Spaniards." And said he, " Without the trouble of enquiring of these things in my native country, yet if I wrote a letter to Roxon an answer would come immediately to Nippon." These things were fixed in my memory and I did not understand at that time why he came to Nippon, but I thought this : When he lived in his own land, he heard that the gold and iron coins had become altered in Nippon, and thought, perhaps, people may have become poor there ; if so there will certainly be distress. When the people are suffering, the command of the government prohibiting the religion of Yaso will not be kept. Even though it be observed, if I drew people with money to this doctrine, that prohibition will cease. And so he may have come to Nippon. After this we had no talk about the money. However, on the 7th day of the 10th month of this year, that Chôsuke died. He was 55 years old. After the middle of the months the Roman also becoming ill, died on the 21st day of the month. He was about 47 years of age.

As there is something I had mentioned to the government previously, I now write these things in full which were asked and replied to, in three volumes. When I first wrote all the circumstances of this affair, I copied out the whole of what the Nagasaki officials told the Yedo commissioners, and advised the government of it. In it I wrote what he said of all foreign countries. In the end I have written all the conversation that passed between us. As it is now a long time since this happened, there are many things forgotten. As to the meaning of those words and his language, there may be many blunders. The things in it relating to all foreign countries I will publish and shew to any one

who seeks to know fully about foreign countries; but the things written at the close of the book might be shown to any one, yet if the government should ask about this, it can be said that it would be wrong to shew them to other persons.

FLY SHEET (THE FIRST COMING OF THE ROMAN TO NIPPON).

At a village named Kuriu, in the island of Yakushima, in the country of Hamo and province of Ōsumi, a fisherman named Kuboura and some others of the province of Awa came, and staying there, were engaged in fishing. On the 28th day of the 8th month of the Rat, in the 5th year of the Hōei period (Oct. 10, 1709), the seven men were in their boat, and came to the part of the sea lying out from Yudomari village in Yakushima; more than three *ri* away from the land they saw there was a ship larger than they had ever seen before. As these seven men were returning to Kuriu, a boat was lowered from the ship, a sail hoisted, and they came towards the fishermen. As they came rowing towards them, and were only 10 *ken* away, they saw in that boat 10 men such as they had never seen before. One was paddling. They came quickly on, but the fishermen got to land, and that boat returned to the ship. That evening the villagers looked and saw out at sea from a village of Yakushima named Onoma the many-sailed ship that had pulled up the boat go towards the east. When it was night, as it became cold, all went home and could not tell where the ship had gone to.

On the morrow, the morning of the 29th, the ship which appeared the day before on the sea near Yudomari village two *ri* west of Onoma, was there, but as the north wind was strong, it sailed away to the south. At the half hour of the Horse (12.30 p.m.) that ship had quite disappeared. That day a farmer named Tōbei, of the village of Koidomari in Yakushima, went to a place called Matsushita to burn charcoal; and as he was cutting wood, hearing a voice behind, he looked back. A man with a long sword beckoned to him, but he did not understand his words. As he appeared to be asking for water, Tōbei went near and gave him some, and then ran away. When the other had finished

drinking, he called Tôbei again, and he being afraid on account of the sword, would not go naer again. The man, conjecturing Tôbei's thoughts, put away the sword, and then Tôbei drew near and he gave Tôbei one Ôgon. Then as Tôbei thought he must have landed from among the men rowing the boat on the previous day, he would take neither sword nor money, but went away towards the shore. No ship nor any other man appeared. Then Tôbei, returning to his own house, sent a messenger to the neighbouring village and reported this matter. He then went with two men, one named Goroyemon, of the village of Hirata, and the other Kihei to Matsushita, and met the foreigner. Then that man, pointing to Koidomari, seemed to say that he would go there. As it appeared as though his feet were tired, one helped him on, another held his sword, and the third held something like a bag which he had brought with him ; and they came together to the house of the Koidomari villager without eating. That man also took out two round Ôgon and two square ones, and offered them to the house-owner, but he would not receive them. They could not converse or understand anything about him, but his form was the same as that of the Nipponese. The tonsure was like that of the Nipponese ; on his body he had a blue cotton garment with the Yotsumeyui crest, dyed like the lines of a chessboard and with brown lining. The length of the sword was two feet four inches ; he wore it on one side in our style. When this matter came to the ears of the official who had charge of the island, he caused a place to be made to put him in, at a village called Miyanoura, and having removed him there, told the Lord of Satsuma.

The ministers of Satsuma sent up a report sealed with their names to the commissioners at Nagasaki. (That letter they wrote on the 13th day of the 9th month. Those *Karô*, viz., Shimamura Ôkura, Shimamura Shôgen, Niïro Ichi no Kami, and Tanegashima Kurando wrote and signed it. The Nagasaki commissioners were Nagai Sanuki no Kami and Bessho Harima no Kami. The Satsuma *Karô* requested the commissioners to fetch them away to Nagasaki. After that, word was also sent from Satsuma to Nagasaki of his making round signs, and of the words he spoke—I mean, "*Rôma*," "*Roxon*," and so forth, as mentioned above.) The authorities summoned the Hollanders first, and them all the foreigners living in Nagasaki, and enquired the meaning of the words

spoken by him, but no one understood them. Moreover, as the winter was nearly over, and the north wind was constantly blowing, and waves were rough on the sea, the ship that was conveying him was twice blown back, but the Satsuma men worked hard, and not caring for wind or wave, came at last to Ōsumi province, from whence they sent him to Nagasaki. He asked very earnestly to go to Yedo, and it appeared he did not like to go to Nagasaki, but as they could not go with him to Yedo according to his wish, they came to a place belonging to Nagasaki named Abu, escorted by many other ships. Here they left the ship, took him to Nagasaki by land, and put him in prison. Then they made the interpreters who knew Dutch inquire the cause of his coming, but though they knew the names of the places, they did not understand anything else he said, and as the Roman said he disliked Hollanders, it was not thought well to shew them to him. So placing paper screens between them, they caused the Hollanders to listen, but there were many things they did not understand; and inasmuch as his speech was half Nipponese, it was yet more difficult to comprehend. But he seemed desirous of saying many things, and so at last it was said, "You should tell what you wish to find out to the Dutch residents." He replied, "I will do so." Among the Hollanders were a man named Atereyanto and Capitan Yasufuru Han Masteru, who had learned the old Roman language. They went together into the room where he was. (The language of that country is the Latin tongue.) Through these the reason of his coming was learnt, and so the Nagasaki commissioners communicated with Yedo.

Afterwards I heard that when he met the Hollanders he seemed to become very proud. They for some reason appeared to be afraid of him. They had learned that language, but as it was six years before, had forgotten it and did not understand very well what he said, but after he had explained, they comprehended by degrees.

After that there is the matter of his conveyance hither from Nagasaki.

In the summer of the next year the government told the Nagasaki commissioners that he was to go to Yedo. Therefore, choosing three interpreters who had become accustomed since the previous year to his language, on the 26th day of the 9th month they left Nagasaki and

came to Yedo in the middle of the 11th month. Then as the commissioners who presided over the prohibition of the religion of Yaso received orders to that effect, he was placed in the prison of their office. What happened after that is as I have written before. The commissioners gave directions that his daily rations should be fixed without change at all at what he had from his first arrival in Nagasaki until then.

(He always ate twice, after noon and sunset. At the two meals he had rice; in the soup were wheaten dumplings fried in thin sauce, and in it herring or fish and onions were boiled; a little vinegar and salt was put in. The dessert consisted of four roast chestnuts, two oranges, five dried persimmons, two round persimmons and one piece of cake. On his day of purification he ate only once,—at noon, but he ate dessert twice on those days,—eight roast chestnuts, four oranges, ten dried persimmons, four round ones, and two pieces of cake. I don't know whether he threw away the peel of his dessert. Even on fast days he ate fish, and after he came to Yedo he would not enter a bath even once, but he wasn't a bit dirty; and except when he was eating he drank neither cold nor hot water.) In the bag which he first brought with him were a copper image, a painted figure, vessels for offering things to it, vestments and a rosary; and besides there were 16 volumes of books, 181 pieces of gold *Ôgon* shaped like a *sudzu* (bell), 160 *Ôgon* like a ball (*dan*), 48 pieces of gold coined in the Nippon Genroku period, 70 Nipponese cash and 31 cash of the Kôki period. Six of the books were never out of his hand; he used to write from them. (As it would be useless to describe their appearance exactly, I don't write it.)

Shôtoku 5th year, the middle of 2nd month of Itsubi (1715).

(Signed) Chikugo no Kami, Jugoi-no-ge, Minamoto no Kimi-yoshi

DISCUSSION.

Mr. Satow thought it would be interesting to the members of the Society to know that there existed an account of the voyage of the Abbé Sidotti in the Spanish language, entitled "Relation del viage que hizo el Abad D. Juan Baptista Sidotti, desde Manila al Japon, embiado por el Papa Clemente XI," 1717, which had also been translated into Italian and published in Rome in 1718. There was also an account in the 7th volume of Charlevoix' "Histoire et Description du Japon," which concluded with the statement that he met with a violent death, but this was clearly disproved by Arai Hakuseki's narrative.

DESCRIPTIVE NOTES ON THE ROSARIES (JIU-DZU)
AS USED BY THE DIFFERENT SECTS OF
BUDDHISTS IN JAPAN.

BY J. M. JAMES.

[*Read April 12, 1881.*]

The most casual observers amongst residents in Asiatic countries where the Buddhist religion predominates must be familiar with the name and form of the rosary carried by the monks of the different sects, either in their hand or twisted round the wrist. Few can have failed to notice this inevitable appendage to the costume of the priests met with in one's daily walks ; but the idea of investigating the origin and use of apparently so trivial an ornament may not have suggested itself to many. However, to a student of Buddhism the matter presents a different aspect. He, if he wishes to attain any proficiency in the subject which he has undertaken, must grapple with and solve these—however trivial—technicalities, for they are stepping-stones from which in the future he may be able to obtain a comprehensive view of this vast dogma of Buddhism, with all its intricate network of metaphysical reasoning, round which unceasingly revolves the Wheel of the Law.

It is a slow and up-hill struggle : perplexing theories and legendary lore confront us at almost every step. These have to be surmounted, and so doing, however trivial a subject may appear to outsiders, it must not be passed over carelessly by the student, but must be thoroughly analysed. With this object in view allow me to claim your interest this evening in describing one of the many molecular links out of which the

Buddhist dogma is composed, so that in the future when our collection is complete we may be able to assign to each its proper place and value, and thus obtain a fair view of the whole fabric. By first describing the *Shō-zoku-jiu-dzu* (rosary), which *all the sects use in common*, and afterwards those peculiar to each, taking the principal sects of the present day in the order in which they first spread in Japan, I will now attempt to explain in as clear a manner as possible the rosary and its use.

The rosary, or *jiu-dzu*, which, as its name implies, consists of a *number of beads*, or counters for making the number of prayers recited, seems to have been in use amongst the Buddhists for many centuries. Possibly its use and the number of its beads were first determined at the Council of Asoka, B. C. 250. The original number seems to have been one hundred and eight, supposed to correspond to a like number of sins—*Hiaku-hachi-bon-nō*, one hundred and eight sins, or “Lusts of the flesh,” which all human beings are supposed to be heir to. Professor Monier Williams, in his “Modern India,” thus alludes to the rosary :—“Rosaries seem to be common in all religious systems which attach more importance to the repetition, than to the spirituality, of prayer—or the oftener repeated the spirituality increases pro ratio.” Again, he says :—“High-caste Brahmans merely use their rosaries to assist them in counting up their daily prayers,” etc., etc.

THE “*SHŌ-ZOKU-JIU-DZU*,” OR ROSARY USED BY ALL THE SECTS IN
COMMON.

This rosary consists of one hundred and twelve beads of a uniform size, exclusive of two large ones, so placed that they divide the one hundred and twelve into two equal parts, namely, fifty-six between each large bead. From one of the large heads extend two pendant strings on which are strung twenty-one beads, rather smaller than those on the main string; these are here terminated by two beads of an elongated shape commonly termed *Tsuyu-dama*, or Dew-drop bead. These beads, which extend from the large head called *Ten-no-oya-dama*, or Upper-Parent bead, are so arranged that no mistake can be made in knowing which is the upper or lower part of the rosary, and they also show which is the left and which is the right side. They are as follows :—Immediately above the large one is a solitary bead beyond; this the

strings are knotted. From this there are five beads on each string, when the string is again knotted. Still again there are another five beads on each string, which then terminates with a *Tsuyu-dama* (Dew-drop bead). The use of the *solitary bead* is that in holding the rosary with the *Ten-no-oya-dama* uppermost, it should be on the left hand; this will ensure the right signification being attached to each bead during prayer. The collective name of these pendant beads are *Kami-deshi*, Superior disciples.

Extending from the other large bead—*Chi-no-oya-dama*—Lower Parent-bead, are three strings, on two of which are five small beads, each being terminated by a *Tsuyu-dama* string. These are termed the *Shimo-deshi*, or Inferior disciples. The third has ten beads,—similar to those of the disciple-beads,—without any *Tsuyu-dama*; these are used simply as counters, termed *Kadzu-tori*. As the names of the deity, or saint, assigned to every bead on the rosary will be fully described in the catalogue further on, I shall here only mention the significations attached to some of the most important. The upper large bead has several appellations, namely, *Ten-no-oya-dama*, Upper-Parent bead; *Fu*, Father; *Shiyaka-muni*, Buddha; etc. The lower large bead is styled *Chi-no-oya-dama*, Lower Parent-bead; *Bo*, Mother; *Ta-hō-niyo-rai*, the Divine Spirit which inspired, and perfected the true enlightenment of Shiyaka Muni, etc., etc. The orthodox name of the *Tsuyu-dama* (4) is *Shi Tennō*, the Four Regents who are supposed to preside over the four quarters of the universe. Placed as they are at the ends of the strings on which all the other beads are strung, they keep in harmony and order the entire rosary as it is intended to be used. The rosary represents metaphorically the Buddhist Pantheon, consequently the position assigned to the dew-drop-beads—*Shi Tennō*—is supposed to be symbolic of their actual positions of power and authority, according to the Buddhist philosophy, presiding as they do for good or evil over the welfare of this and all other worlds: *San-zen-Kai*, Three thousand worlds; *Jippō-Kai*, worlds on all sides—namely, the entire universe. Thus the working of this boundless, mysterious, and incomprehensible “Wheel of Nature” is kept in perfect harmony.

On the main string of beads, at an interval of seven beads—either way—from the *Ten-no-oya-dama*, are two beads rather smaller than the others, and generally of some different material, in order that they may be more readily distinguished. Again from these smaller beads, at a further interval of fourteen beads on either side, are other two of the same sort. These are sometimes erroneously called *Shi Tennō*, Four Regents, or *Shi Bosatsu*, Four Saints, varying with the sect. The material of the beads differs in considerable degree, according to the taste of the possessor; crystal, glass, ivory and jade stone are often used, whilst others are of ebony or rose-wood, with the four *internal* beads, on the main string together with the *Kami* and *Shimo-deshi*, and *Tsuyu-dama*, of crystal, coral, and even silver and gold, according to taste or fashion. Formerly rosaries were made from the wood of the Bodai tree (Indian, Pipal tree), under the shade of which Shiyaka Muni is said to have attained supreme and universal enlightenment; but probably owing to this wood not being easily obtainable, common rosaries are now frequently made from the wood of the cherry and plum trees.

The rosary as above described is usually carried by the monks and laity of all the sects, on all occasions of religious state, visits of ceremony or condolence, funerals, etc., and varies as much in material and value as do the rank and wealth of its owner.

TEN-DAI SECT.

Founder, Den-giyō Daishi; doctrines first taught in Japan, A.D. 804.

The rosary used by the monks and followers of this sect consists of a string of one hundred and twelve beads of the usual size, and one large bead, *Oya-dama*, Parent-bead. At an interval of seven beads from the *Oya-dama* on either side are placed two beads smaller than the others, and again from these at a further interval of fourteen, two more of the same size; these are invariably of some different material from the main number of beads. These four beads are generally termed the *Shi Tennō*. From the *Oya-dama*, independent of the main string of beads, extend two pendant-strings, of about four inches in length; having on one, twenty, and on the other, ten small beads. These are used as counters during the recital of prayers, and

when used as such, one of the ten beads is slipped to the extreme end of the string after one round, that is when one hundred and twelve prayers have been recited. After the ten have been exhausted, one of the twenty is slipped to the extremity of its string, and the ten replaced as at commencement of prayer. Thus by the time the whole of the twenty counters have been once used, twenty-two thousand four hundred prayers will have been recited. This operation can be continued over and over again, according to the spiritual inclination or religious fervour of the devotee.

SHIN-GON SECT.

Founder, Kū-kai (commonly called Kō-bō Daishi); doctrines first taught in Japan, A.D. 805.

The rosary as used by the monks and laity of this sect does not differ in any great degree from the one previously described. It consists of one hundred and twelve beads, and two *Oya-dama*—Parent-heads. The relative position of the beads on the main string is the same as in that used by the Ten-dai sect. From the *Ten-no-ōya-dama*—upper Parent bead—extend two strings of about five inches in length, on one of which is a solitary bead; the strings are here tied with a peculiar knot, said to resemble the ancient Chinese character 𠂇¹ man, or wan,—Ten thousand; all, a myriad. Beyond this, on either string, are five beads, terminated with an elongated shaped stopper-bead—*Tsuyu-dama*—Dew-drop-bead.

JŌ-DO SECT.

Founder, Hō-nen Shō-nin: doctrines first taught in Japan during the end of the 12th century.

The rosary used by the monks and laity of this sect consists of two separate strings of beads, rove one within the other. On one, exclusive of the *Oya-dama*, are forty beads; and on the other, exclusive

¹ One of a combination of characters used in representing one of the many attributes of Buddha, thus;—(萬德尊) Man-toku-son,—Virtue personified.

of its *Oya-dama*, twenty-seven of the same size as the forty on the other string, and twenty-eight smaller beads placed alternately with the larger ones. There are thus forty on one string, and fifty-five on the other, making a total on both strings of ninety-five, exclusive of the large beads. The string which has the fifty-five beads on it—in addition to its being rove through the other string of beads—is rove through a metal ring sufficiently large to enable the rosary being passed freely through it when being used. Attached to this ring are two string-pendants, on one of which are ten small beads, and on the other six; these are used as counters. This style of double-rosary is peculiar to the Jō-do sect.

The manipulation during prayer is as follows :—Using it with either hand, the string which has the forty beads on it is placed with its *Oya-dama* lying over the first joint of the fore-finger with the other fingers lying through the rosary. It is then turned by the thumb, one bead at a time from the *Oya-dama*—one bead for each prayer—until the *Oya-dama* comes round to its starting point. The other string,—which has fifty-five beads on it—is placed between the second and third fingers of the same hand, and used as the first set of counters. Thus, after one round of the upper rosary has been completed, one bead of the lower rosary is slipped through between the fingers—also from its *Oya-dama*—and so on, one bead for every turn of the upper rosary, until the whole of the lower rosary has been exhausted, when recourse is had to one of the small pendant beads to indicate the fact. The whole process has then to be gone over again, so that by the time the whole of the sixteen counters have been once used, thirty-six thousand seven hundred and thirty-six prayers will have been recited.

This style of double-rosary was first introduced and used by Awanosuke, one of the personal attendants of the founder of this sect, the intention being that it should be manipulated only with the left hand, thereby leaving the right hand free for waiting on and carrying out the orders of his superior. By this means, whilst attending to his master with one hand, the faithful retainer could still uninterruptedly be carrying on his continuous round of prayers with the left hand, thus facilitating a happy combination of spiritual and secular duty.

ZEN SECT.

Founder, Yei-sai Zen-shi; doctrines first taught in Japan during the early part of the 13th century.

The rosary invariably used by the monks of this sect consists of one hundred and twelve beads, exclusive of one large bead, or *Oya-dama*, having no pendant-beads (Kami or Shimo-deshi) from the *Oya-dama*. From the *Ten no Oya-dama* or large bead, extending about three inches in length, are the ends of the strings on which the whole of the beads are strung; on these strings there is a small stopper-bead, *Fusa-dome*, Tassel-stopper (either of ivory, crystal or sometimes wood), and beyond this the strings are knotted together. On the main string of beads, at intervals of eighteen beads apart, are four small beads (of some material different from the others), two on either side of the *Oya-dama*. They are termed the *Shi Tennō*—Four Regents.

ZEN SECT.

The rosary of the laity of this sect differs slightly from that which the monks use. The main number of beads is the same, but the positions assigned to those representing the *Shi-Tennō* and the Kami and Shimo-deshi (which are used as counters) are the same as in that used by the Shin-gon sect.

MONTO SECT OR IKKŌSHIU.

Founder, Shin-ran Shō-nin; doctrines first taught during the early part of the 13th century.

The rosary used by the monks and laity of this sect is very similar to that used by the Ten-dai sect; the position assigned to the *Shi-Tennō*, Four Regents, is the same, the only difference being that it has two large beads, *Oya-dama* (instead of only one, as in that of the Ten-dai sect), and the number of Kami-deshi, superior disciple beads, is less. Extending from the upper large bead,—*Ten-no Oya-dama*,—are two short strings having on each ten beads; these are knotted at the fifth bead, and the remaining five on each string are terminated by two *Tsuyu-dama* or Dew-drop beads.

NICHU-REN HOKKE SHIU SECT.

Founder, Nichu-ren Shō-nin; doctrines first taught during the middle of the 13th century.

The rosary used both by the monks and followers of this sect is a fac-simile of the Shō-zoku jiu-dzu—one which is used in common by all the sects, differing only in the size of the beads, which are as a rule very small, for the convenience of carrying and for being more easily manipulated. The beads corresponding in position with the Shi-Tennō, Four Regents, of the Ten-dai and Monto sects are commonly termed the Shi Bosatsu, Four special saints.

KANŌ.

A term applied to the manner—also implying the acts of manipulating the rosary during the recital of Prayers of Request (of a just nature) to a certain deity endowed with the power of granting or withholding the desire of the devotee. It is as follows:—The rosary is held—having one cross-turn taken in it—with its loops placed over the middle finger of both hands, the large beads resting against the back of the fingers close to the knuckle joint. The *Ten-no ōya-dama*,—Upper-Parent bead,—on the right, and the *Chi-no ōya-dama*—Lower-Parent bead,—on the left hand, whilst the *Deshi-dama*,—Disciple-beads,—hang down the backs of the hands.

The hands are then brought together—finger-tips touching,—with the loop of the main string of beads lying between them, and raised slowly and reverently to the forehead (very frequently as high only as the chin) of the supplicant as the Prayers of Request are repeated. During prayer the beads, together with the loops of the rosary, are slightly or in a most energetic manner, according to the degree of religious fervour, rubbed up and down, the friction of the beads causing a peculiar grating and rather unpleasant noise. However, this custom of rubbing the hands in too extreme a manner is considered excessively vulgar by those of the orthodox school, who simply keep to the “Middle Path.”



KI-TŌ.

The ceremony of invoking the gods, peculiar to the Ten-dai, Shin-gon and Nichi-ren sects—Riyō-bu—or those sects of Buddhists into whose doctrines a certain proportion of Shintō formulas have been introduced.

GOMA.

The ceremony of Go ki-tō and Goma combined is exclusively confined to the Ten-dai and Shin-gon sects, and is thus performed :—In front of the altar—in temples of these sects—stands a large square wooden box, internally lined with metal, called Goma-dan ; in this a fire is ignited with slips of a certain wood, which, whilst burning, makes a crackling noise, and emits sparks abundantly on all sides. During this interval the administering monk repeats the usual incantatory prayers with great vigour, at the same time using the rosary in a manner similar to that described under Kan-ō.

This is believed to have the desired effect of causing the recovery from, and prevention of, sickness, or dispelling evil spirits, and all tendencies that way.

With the Nichi-ren sect the Go ki-tō is performed without the Goma ; the manner of manipulating the rosary is different and peculiar to this sect. The rosary used on these occasions differs slightly from that in ordinary use ; it has no counters attached, simply the Disciple-beads ; beads on the main string are vulgarly termed Mikan-dama, Orange-beads, from their similarity to the shape of an orange, being slightly flattened at their sides. The ceremony is as follows :—The rosary above described is tied to a small wooden sword (of about five inches in length), the large bead—*Oya-dama*—being fastened near its point. On the sword is written the Dai-moku, or Original prayer of the Creed :—“*Namu-miyō-hō-ren-ge-kiyō*,” besides other incantatory prayers. The monk then commences :—Holding the sword in the right hand he first repeats the first article of the creed, “*Miyō-hō-ren-ge-kiyō-jō-hon-dai-ichi*,” at the same time making nine passes in the air with the sword, which are supposed (mentally) to correspond with the character *Miyō* ! Mysterious ! Wonderful !  And sometimes this figure  is used, which

is also made with nine strokes. Whatever prayers are recited the metre is so arranged that it harmonizes with the *nine passes* used in making the two figures as above. This is termed "*Ku-ji wo kiru*," namely, cutting the nine figures, or words, and *breaking the spell*. Whilst the passes are being made, the sword cuts are delivered in a short, jerky manner, and the rosary clacking against the sword at every cut assists greatly in marking proper time, and also serves to keep up the effect. Monks who are entitled to officiate on the occasions of *Go² ki-tō* must have undergone a special training for this purpose. Those who desire so to do have to repair to *Shō-chu-zan*,³ a celebrated monastery of this sect, in *Shimōsa*, and there for the space of one hundred days (generally during winter) undergo the orthodox probationary course of asceticism.

Living on a most scanty diet (rice-porridge only), bathing in cold water three times daily, the journey to and from the bath being made almost in a state of nudity, nothing but a loin-cloth being worn—and learning the necessary prayer of incantation by heart, is the course prescribed. At the expiry of this time, and after passing the required test examination, a diploma is issued by the abbot, which enables the possessor to officiate in the ceremony required.

At an early date I hope to be able to append a glossary of the Sanskrit significations.

² *Go*, an honorific prefix. ³ Also called *Hokke-Kiyō-ji*.

ANCIENT JAPANESE RITUALS.—PART III.

(Nos. 5, 6, 7, 8 & 9.)

BY ERNEST SATOW.

[Read May 10th, 1881.]

No. 5.—HIRANU NO MATSURI, OR SERVICE OF THE
TEMPLE OF IMAKI.

The temple of Hiranu, now called Hirano, is situated in the village of Kogitayama on the N. E. of Kiyau-to, and according to the usually accepted account, derived from the Ku-zhi Kōf-geñ, the gods worshipped at the four shrines which it contains are the following :

At the Imaki shrine, Yamato-dake-no-mikoto ; at the Kudo shrine, Chiu-ai Teñ-wau ; at the Furuaki shrine, Niñ-toku Teñ-wau, and at that of the *hime-gami* (goddess), Amaterasu-oho-mi-kami (the Sun-goddess). These four deities are regarded as the ancestral gods (*Uji-gami*) of the Minamoto, Tahira, Takashina and Ohoye families respectively.

Mabuchi supposes the first of these four deities, to whom the present ritual is addressed, to have been brought from a place called Imaki in Yamato by Kuwañ-mu Teñ-wau, when he founded the present city of Kiyau-to. He adds that a temple called Kudo no Zhiñ-zhiya, situated near the temple of the Gods of Wind at Tatsuta (see Yamato Mei-shiyo Dzu-we vol 3, f. 50), is mentioned in the "Catalogue of Temples," but that where the god of Furuaki came from is unknown. Another point which Mabuchi was unable to explain that besides the

four families above mentioned, the Yamato family was also represented among the persons who took an official part in the ceremony. In fact, all that he is able to tell us about the service amounts to very little, nor does Motowori throw any additional light upon the matter.

The following solution of the difficulty has lately been proposed by a native scholar of independent views. He reads 今木 *Ima-ge*, instead of Imaki or Imagi, and explains *Ima-ge no Kami* to be 'the god of New Food,' whose name was Waka-toshi no Kami (god of the new harvest).^{*} The spot where a certain temple of this god stood came to be

^{*} *Ima-ge* did not always mean 'this year's crop of rice,' but seems to have been also used in a slightly different sense. It was the custom in the very earliest times to perform every month at the Mikado's palace a rite called *Kamu Ima-ge no Matsuri* (神今食祭), the "Service of the Divine New Food," which evidently could not have been, on every occasion, the lately harvested crop of rice. It was probably freshly hulled rice that was offered to the gods at these celebrations, and afterwards partaken of by the Mikado. In later times this *Matsuri* was held only twice a year, on the 11th day of the 6th and 12th months, immediately after the *Tsuki-nami no Matsuri* or so-called "Monthly Service." Detailed directions are given in the *Gi-shiki* (bk. 1, f. 26 v.), which show the nature of the ceremonies observed in the 9th century. Towards evening the Mikado proceeded to a special building called the *Naka no Wi*, which stood west of the Palace, where he immediately took a bath, and then the service called the *Oho-tono Hogahi* or "Luck-wishing of the Great Palace," was performed, after which mats were brought in and his bed was made. This was supposed to be symbolic of the rejoicings on the occasion of the completion of the first palace of the first Mikado, and of his taking possession of it as his residence, sleeping in a house being regarded as the sign of ownership. (For this reason a pillow is often placed in the shrine of a Shintô temple, as a symbol of the god's presence.) The Chief Cook, who bore the ancient title of *Kashikade no tomo no miyatsuko*, kindled fire by means of the fire-drill and began to cook the rice, while the *Adewani no sukune* (originally called *Watadsumi no murashi*, a superintendent of fishers) blew up the fire. Other persons prepared various dishes to be eaten along with the rice. Towards eleven o'clock the procession was formed, headed by the Chief Cook bearing a torch, and followed by other functionaries carrying the utensils, dishes, soups, water and *sake*, part to be offered to the gods, part for the Mikado. About midnight the meat was cleared away. The Mikado and his suite passed the night in the building, and about half-past three next morning his breakfast was served in the same style. About five o'clock he changed his clothes, and returned to his own apartments, where the *Oho-tono Hogahi* was again performed.

called Ima-ge after the god. But it was, in fact, the ancient custom in every household to make offerings to the God of New Food, in the palace of the Mikado as in the dwellings of the common people. Besides this God of New Food, the Japanese worshipped the god of the cauldron in which water and rice are boiled and the goddess of the saucepan in which food is cooked, under the names of *Oki-tsu hiko* and *Oki-tsu hime*,* names derived from the construction of the fire-place, which is built up with clay, and always contains two compartments, one for the *kama*, or boiler, the other for the *nabe*, or saucepan. Other names for the same things are *kudo* and *kobe*, after which the pair of deities Kudo no kami and Kobe no kami were called,† The first of these is one of the gods to whom the next ritual is addressed, and the second is what, through a slip of the pen, has come to be called Furuaki. Originally written 古閉, in which the characters are used merely as phonetic symbols, by some mischance or other it appeared as 古開 in the MSS. from which the printed copies are descended; and the ordinary reading Furuaki rests entirely on a conjecture of Mabuchi, who himself confesses that he does not know whether the characters should be read as *oñ* or as *kuñ*, by the Chinese sound or the Japanese translation. Another household deity was Toyo-uke-bime, the earth conceived of as the goddess of Abundant Food. The rites in honour of these gods were at first performed by the head of the household (*tonushi*, contracted into *tozhi*), but in after times the duty came to be delegated to the women of the family, whence the word *tozhi* to denote women. In the same way the word *miyazhi* (*miya-nushi*), from meaning the 'lord of the palace,' came to be the title of the priest who discharged the function of worshipping the gods of the kitchen. After Kuwañ-mu Tefi-wau founded this temple of Hirano about the end of the 8th century, it became the custom for all the branches of the monarchical family to be represented at the two annual celebrations.

* See Ko-zhi-ki Defi, bk. 12, f. 29. Hirata suggests that *Oki-tsu* is a contraction of *Oki-tsuchi*, earth put or piled up, which seems a probable derivation. (古史傳, bk. 16, f. 5).

† *Kudo* is still commonly used in the province of Ise for 'fire-place,' the usual term for which in other parts of the country is *hetui*.

His own mother belonged to the Yamato family, and his grandmother to the Hazhi family, from whom were descended the Ohoye. The Tahira were sprung from an illegitimate son of Kuwañ-mu himself, the Minamoto from his successor Saga Teñ-wau, and the latter had a secondary wife who belonged to the Takashina family. In this way all these five families came to share in the worship of the Mikado's household gods, being either connected with him by ties of agnatic relationship, or, what was not recognized in earlier times, through females. It was Kitabatake Chikafusa (1293-1359) who first invented the popular account of the gods worshipped at Hirano, and knowing that they were in some manner family deities, proceeded to allot as ancestors to the Tahira, Minamoto, Ohoye and Takashina families, ancient members of the royal line taken here and there at random, beginning with the Sun-goddess and coming down to the prehistoric Nifitoku Teñ-wau.

In the middle of the 9th century the service was performed twice a year, in the 4th and 11th months, on the first day of the ape, and nearly the same *norito*, with slight variations, was read before each of the first three shrines. Whether any, or what, ritual was read before the fourth is unknown. The ceremonies are laid down with great minuteness in the *Gi-shiki* (bk. 1, f. 15). From the fact that the Heir-Apparent and several Princes of the Blood, together with Ministers and Councillors of State, were obliged to take part in it, it is evident that the service was one of great importance in ancient times. As already observed, members of the Minamoto, Tahira, Takashina and Ohoye families were expected to be present, on account of their relationship to the Mikado. In some points the ceremonial observed resembled that of the Kosuga service, which has already been described. Horses were led in solemn procession round the temples, pieces of music were executed on wind and stringed instruments, and a long succession of grave dances were performed by officials of high rank, such as lords-in-waiting and vice-ministers of the Department for the Worship of the Gods (神祇官), as well as by the women who prepared the rice-offerings and the soldiers who took the part of peasants (*yama-bito*). The principal point of difference is that at the beginning of the service these fictitious peasants, twenty in number, entered the courtyard of the temple carrying branches of the sacred tree, *sakaki* (Cleyera

japonica), and recited in turn the praises of the four gods (*kami no yogo*), the words of which have unfortunately been lost. This incident harmonizes completely with the opinion that the deities here worshipped were originally such as would be all-important in the eyes of a peasant, namely, those who provide him with his food and the means of cooking it.

RITUAL.

[TRANSLATION.]

He says : The sovran *who is called* " According to his great WORD " ¹ deigns to say in the wide presence of the sovran great GOD who has been brought ² from Imaki :

The divine treasures which *he* offers up after having, in accordance with the request which the sovran great GOD has deigned to make, widely planted the HOUSE-pillars on the bottom-most rocks and exalted the cross-beams to the plain of high heaven, and having fixed on it as his SHADE from the heavens and SHADE from the sun, and having fixed on [surname, name, office, rank] of the Office of the Gods as Kafi-nushi, *are* a BOW, a SWORD, a MIRROR, a bell, and a silk baldaquin, and a HORSE is led and ranged *with them* ; for CLOTHING, providing bright cloth, glittering cloth, fine cloth and coarse cloth, and having taken and ranged *with them* the first parcels of tribute set-up by the regions of the four quarters ; as to LIQUOR, raising high the beer-jars, filling-and-ranging-in-rows the bellies of the beer-jars ; as to things of the mountains and wilds,—sweet herbs and bitter herbs ; as to the things of the blue-sea-plain,—things wide of fin and things narrow of fin, even unto the weeds of the offing and weeds of the shore,—piling-up high the various kinds of things like a range of hills, he fulfils praises saying : Peacefully accept the great OFFERINGS thus set-up, and glorify the AGE of the sovran eternally and unchangingly, and blessing it as a luxuriant AGE, cause *him* greatly to be for a myriad ages.

Again *he* says : *I* fulfil praises, *saying* : Cause the CHILDREN, the princes, the councillors and all the functionaries to deign to guard

with nightly guarding and daily guarding, and flourishing like the perpetual growth of luxuriant trees ever higher and ever wider in the count of the sovrän, humbly to serve *him*.

NOTES.

¹ See Note 1 to the Kasuga Ritual, Vol. VII, p. 408.

² The expression here rendered "brought" is *tsukahe matsuri kitaru*, lit., "came serving." See notes 1 and 4 to the Kasuga Ritual, Vol. VII, pp. 410 and 411.

There is some doubt as to whether "*he* says" in his ritual means that the Mikado says, or that the reader of the Norito says, a doubt which arises in connection with nearly all the rituals, and different views have been taken by different commentators, as observed in Note 1 to the praying for Harvest. (See Vol. VII, p. 112.)

³ Toy swords and mirrors are still used very commonly as ex-voto offerings to both Buddhist and Shintö gods, the former by men, the latter by women, being symbolical of what is most valued by each sex respectively.

No. 6.—KUDO AND FURU-AKI.

As has been observed in the introduction to the 5th Ritual, *Furu-aki* ought probably to be read *Kobe*.

The text of the *norito* is almost identical with the last, with the exception of the substitution of the words "being the two Houses of Kudo and Furu-aki" for "from Imaki", and the omission of the words "Office of the Gods," further down. It is therefore unnecessary to translate it.

No. 7.—MINADZUKI NO TSUKINAMI NO MATSURI.

This service was celebrated in honour of the 304 shrines, distinguished as Great Shrines, the offerings to which were arranged upon tables or altars. These shrines formed a portion of the much larger

number at which the "Praying for Harvest" was celebrated, distributed as follows, according to the Catalogue in the *Yefi-gi Shiki*:

Kiyau-to	34
Yamashiro	53
Yamato	128
Kahachi	23
Izumi	1
Tsu	26
Ise	14
Idzu	1
Musashi	1
Aha	1
Shimo-fusa	1
Hitachi	1
Afumi	5
Wakasa	1
Taŋ-go.....	1
Harima	3
Ōki	1
Kii	8
Aha	2
<hr/>	
Total	305

There is evidently a mistake of a unit here.

According to one view the object of this service was to render monthly thanks to the gods for the protective care they bestowed on the country in response to the petitions offered up at the Praying for Harvest. It was, however, probably more ancient than the Praying for Harvest (see Vol. VII, p. 108). The ritual is identical with that of the Praying for Harvest, with the exception of the latter part of the second paragraph, which runs as follows: "As to the monthly OFFERINGS for the sixth month of this year (in the twelfth month say monthly OFFERINGS for the twelfth month of this year), providing bright cloth, glittering cloth, fine cloth, coarse cloth, I fulfil praises *by setting-up* the great OFFERINGS of the sovran GRANDCHILD's august-

ness, as the morning sun rises in glory," and by the omission of the third paragraph containing the petition to the gods of the harvest.

A list of the offerings made at the 304 or 305 shrines is given in the "Ceremonies of the Services of the Four Seasons" (四時祭式), Deha-boñ edit., vol. 1, f. 28 v. For an account of the history of this service see the "Materials for a History of Shiñ-tau" (神祇志料) of Kurita Hiroshi, vol. 5, f. 19.

No. 8.—OHOTONO HOGAHI, OR LUCK-WISHING OF THE GREAT PALACE.

This was one of the Occasional Services, and in later times was always celebrated before and after the *Kamu Ina-ge no Matsuri* (see above note on p. 184) and the *Ohonihe* or *Ohoñbe* (Coronation Festival.) It dates, however, from the very earliest ages, namely, from the establishment of the capital at Kashihara in Yamato by Zhiñ-mu Teñwau. In language closely resembling that of the ritual, the author of the *Ko-go Zhifu-wi* (古語拾遺) describes how on that occasion the timber was cut in the forests with a sacred axe, and the foundations of the great hall or palace dug with a sacred spade. The pillars of the house were firmly planted on the rocks beneath the surface, and the ends of the rafters, crossed over the ridge-pole, were raised high towards the sky. Offerings, or 'divine treasures,' as they are called, namely, a mirror, beads, spear, mantlet, paper-mulberry bark and hemp were prepared by the *imibe*, who then, under the guidance of the head of their tribe, deposited in the great hall the sword and mirror, which constituted the sacred symbols of sovereignty, hung the building with strings of red beads, laid out the offerings in due order, and read the ritual. The service of the Palace Gates (Ritual No. 9) was performed immediately afterwards.

Another indication of the extreme antiquity of the composition is the comparatively large number of archaic words which it contains. For some of these no precisely corresponding expression could be found in the Chinese language, and though equivalents were assigned to others,

it was still judged necessary to mark by a note in *kana* the exact way in which the Chinese characters were to be read. These *kana* were not the derivative signs usually denoted by that term, but whole Chinese characters used as phonetic symbols, such as are found in all the early remains of Japanese literature before the 10th century.

The object of the service was chiefly to propitiate two deities who are described as the Spirits of Timber and Rice, and to obtain their protection for the sovereign's abode, so that it should be preserved from decay, and its occupier from snake-bite, pollution through birds flying in at the smoke-hole in the roof and from night-alarms. From the language in which these petitions were offered up, we learn incidentally that at the period when this service was first instituted, the palace of the Japanese sovereign was a wooden hut, with its pillars planted in the ground, instead of being erected upon broad flat stones as in modern buildings. The whole frame-work, consisting of posts, beams, rafters, door-posts and window-frames, was tied together with cords made by twisting the long fibrous stems of climbing plants, such as *Pueraria Thunbergiana* (*kuru*) and *Wistaria Sinensis* (*fuji*). The floor must have been low down, so that the occupants of the building, as they squatted or lay on their mats, were exposed to the stealthy attacks of venomous snakes, which were probably far more numerous in the earliest ages when the country was for the most part uncultivated, than at the present day. In the Ritual of the General Purification, snake-bite is counted as an 'offence' or cause of pollution, which has to be expiated by the sacrifice of a certain quantity of valuable property, and it was in accordance with a very natural impulse that the protective deities were besought to avert such a misfortune. There seems some reason to think that the *yuka*, here translated floor, was originally nothing but a couch which ran round the sides of the hut, the rest of the space being simply a mud-floor, and that the size of the couch was gradually increased until it occupied the whole interior. The rafters projected upward beyond the ridge-pole, crossing each other as is seen in the roof of modern Shintō temples, whether their architecture be in conformity with early traditions (in which case all the rafters are so crossed) or modified in accordance with more advanced principles of construction, and the crossed rafters retained only ornaments at the two ends of the ridge. The roof was thatched, and

perhaps had a gable at each end, with a hole to allow the smoke of the wood-fire to escape, so that it was possible for birds flying in and perching on the beams overhead, to defile the food, or the fire with which it was cooked. This is also one of the causes of pollution mentioned in the General Purification as requiring expiation. Such a description of the residence of the sovereign also seems to point to a very early origin for the main part of the ritual, though the separation of the members of the sovereign's family into two classes, CHILDREN (*miko*), who correspond to the modern 'Princes of the Blood,' and princes (*kimi*), as the grand-children and other agnates who are not themselves sons and daughters of a Mikado are called, is an arrangement which dates from the historical period (reign of Tefi-mu Tefi-wau), and the ending of the ritual where these terms occur must therefore be regarded as more modern.

The following account of the ceremony is taken from the *Gi-shiki* (middle of the 9th century). The Office of the Gods (神祇官) took four boxes containing precious stones, cut paper-mulberry bark, rice and *sake* in bottles, and placed them on two eight-legged tables, which were then borne by four attendants (*kañ-domo*), preceded by functionaries belonging to the Nakatomi and Imibe tribes, the priests (*miya-zhi*), archivists and other attendants, all wearing wreaths and scarfs of paper-mulberry bark, walking in double line, the rear being brought up by virgin priestesses. On the procession arriving in front of the palace gate, the tables were deposited under the arcade which ran along the outside of the wall. A servant (*oko-doneri*) called out for admittance, and the porter having announced the procession by saying that an officer of the Imperial Household had asked for admission in order to pronounce the Luck-wishing of the Great Palace, the order "Let him pronounce it" was transmitted back from the Mikado. The porter thereupon called out: "Let him declare his name and surname," in reply to which the officer advanced to a spot previously marked out by a wooden ticket with his name on it, and said: "It is so-and-so (giving his name) of the Office of the Gods who wish to perform the Luck-wishing of the Great Palace." To this the Mikado's answer was: "Call them." The officer of the Household replied "O" (the old word for "Yes"), and retiring, called the functionaries of the Office of the Gods, who in their

turn replied "O." The Nakatomi and Imibe then put on their wreaths of paper-mulberry, to which the latter added sashes (*tasuki*) of the same material, and advanced ahead of the tables up to the "Hall of Benevolence and Long-life" (one of the principal buildings of the palace). The virgin priestesses had meanwhile entered by another gate, and were waiting in the Palace enclosure. They now followed the tables, and came up to the verandah on the east side of the building, where they took charge of the boxes of offerings. The procession thereupon entered the building. One Virgin Priestess went to the Hall of Audience (*shi-shiŋ-deŋ*) and scattered rice about it, while another proceeded to the gate on its south side and performed the same ceremony there. The Imibe took out the precious stones and hung them at the four corners of the Hall, and the priestesses withdrew, after sprinkling *sake* and scattering rice and cut paper-mulberry fibre at the four corners of the interior. The Nakatomi stood on the south side of the building while the Imibe turned to the south-east, and in a low voice read the ritual. The whole company next went to the Mikado's bath-room and hung precious stones at its four angles, and the same at his privy, while the priestesses scattered rice and sprinkled *sake* as before. After this they retired through a gate on the west of the palace, with the exception of the priests and attendants, who proceeded to the palace kitchen to hang up paper-mulberry fibre and scatter rice and sprinkle *sake*. When all was over, gifts were distributed to all those who had taken part in the ceremony.

RITUAL.

[TRANSLATION.]

He felicitates and brings to rest with the heavenly mysterious congratulatory words,¹ thee Yabune² no Mikoto, *who art* the fresh *ABODE* which has been made for the sovran GRANDCHILD'S augustness' *SHADE* from the heavens and *SHADE* from the sun, by setting up the sacred³ pillars with the sacred spade, *after* cutting down with the sacred axe o

the Imibe the trees which grew in the great gorges and small gorges of the remoter hills, and offering the two ends to the god of the mountains, and bringing forth the central parts—the *ABODE* *namely* of the sovran GRANDCHILD's augustness, who in succession to heaven's sun rules over the region-under-heaven, the dominion to which he deigned to descend *after that* the sovran's dear progenitor and progenitrix, who divinely remain in the plain of high heaven, had caused the sovran *grandchild's* augustness by their WORD to sit on the heavenly high SEAT, and deigning to lift and bring the mirror and sword⁴ which are the heavenly symbols, had pronounced the words of luck-wishing, and appointed him, *saying*; "Let our sovran great CHILD, the sovran GRANDCHILD's augustness, sitting on this heavenly high seat here,⁵ tranquilly rule the succession of heaven's sun,⁶ the Great Many-Islands, the Luxuriant Reed-plain Region of Many Spikes⁷ for long autumns, a myriad thousand autumns, as a peaceful country," and by the heavenly COUNSEL-TAKING⁸ the rocks, trees and the least leaf of the herbs likewise that had spoken, had been silenced.

He says; *I repeat* the NAMES of the gods who tranquilly and peacefully watch⁹ so that the great HOUSE where he sits ruling, *as far as* the limit of the bottom-most rocks, may not have the calamity of crawling worms *among* the lower cords *which tie it together*, *as far as* the limit of the blue clouds of the plain of high-heaven, may not have the calamity of birds flying in at the smoke-hole¹⁰ in the roof; the meeting¹¹ of the firmly planted¹² pillars, cross-beams, rafters, doors and windows have no movement or noise, have no loosing of the tied rope-knots or unevenness of the thatch with which it is roofed, and no harmful rustling in the joints of the FLOOR or alarms at night. And having humbly praised their names as Yabune Kukunochi¹³ no Mikoto and Yabune Toyo Ukebime no Mikoto, *I say*: "In consequence of your humbly praising the AGE of the sovran GRANDCHILD's augustness, eternally and unchangeably, and humbly blessing it as a luxuriant AGE, sufficient AGE and long AGE, let the Divine Corrector's augustness and the Great Corrector's augustness¹⁴ tranquilly and peacefully govern the *proceedings*, correcting any omissions which they may have seen or heard in the luck-wishing and bringing-to-rest uttered by the Imibe no Sukune So-and-so, who hangs a thick sash on his weak shoulders, and

adds bright fine cloth and glittering fine cloth to the fresh ever-bright red-stones, the innumerable strings of beads of luck-wishing, which the sacred bead-makers have made with due-care-to-avoid-pollution and attention-to-cleanness."

Parting the words, *he* says: As to declaring *her* NAME as Woman-of-the-great-HOUSE's augustness, *I* fulfil *her* praises by declaring *her* NAME as Woman-of-the-great-HOUSE's augustness, because blocking up the way within the same great HOUSE as the sovran GRANDCHILD's augustness, *she* chooses and knows the persons who come in and go out, by *her* word corrects and softens the grumbling and wildness of the gods, prevents the scarf-wearing attendants and the sash-wearing attendants¹⁵ who present the morning FOOD and evening FOOD of the sovran GRANDCHILD's augustness from erring with hand or foot, and prevents the CHILDREN, princes or counsellors and all the functionaries from indulging their own separate inclinations, causes them to attend in the HOUSE and serve in the HOUSE without bad hearts or foul hearts, and correcting whatsoever faults and errors *she* may see or hear, causes them to serve tranquilly and peacefully.

NOTES.

¹ *Ama iu kusushi ihahi-goto.* Here we have first, the Chinese characters which were thought to correspond most closely to the Japanese words of the original, and second, in a note, those very words repeated in *man-yefu-gana*, so that there is no doubt whatever about the reading. Perhaps 'miraculous' would be as good a rendering as 'mysterious' for *kusushi*, which seems to contain an allusion to the magical effect of the words which follow, and which act as a charm to ward off every kind of calamity from the building. Hence the word *ihahi*, rendered 'congratulatory,' is written with 護 'to protect.' The words in the translation here referred to begin with: "*He* says: I repeat the NAMES of the gods who tranquilly and peacefully watch," etc. In all the editions of the *Yen-gi-shiki* and in the *Norito kan* the reading is *ihahi-goto mochite koto-hogi shidzume mawosa-ku*, but Motowori proposes *ihahi* instead of *shidzume*. Hirata has restored the earlier reading, which there seems to be no adequate reason for altering.

² *Mi araka imashi Yabune no mikoto*, Yabune no mikoto *who art* the abode. *Ya* is simply 'house,' as the Chinese character indicates, and *fune* is a general term for all wooden things that contain, such as brewers' vats, bathing-tubs, as well as 'boat' or 'ship,' which is its most common use. Mabuchi, indeed derives the word *ya-fu-ne* from *iya ofu ne*, 'ever-growing root, and considers it to be an

epithet of trees and the rice-plant; but this seems rather far-fetched. 'Abode' is the closest attainable rendering of the ancient *araka* (modern form *arika*), which is here given in a note as the proper reading of 殿. These notes embedded in the text of the Norito are of the highest value, because they preserve to us archaic words which would otherwise have been utterly lost. The first syllable of *kado*, 'house-door,' is perhaps identical with the *ka* of *araka*.* Observe that *mi araka*, *imashi*, and *Yabulle no mikoto* are all in apposition, thus justifying the insertion of 'who art,' to help out the meaning.

* The foundation and construction of sacred buildings was always attended with these formalities. In the ceremonial rules for the Coronation of the Mikado (*Gi-shiki*, bk. 2, f. 15), we read that a special granary was built for storing the rice used on that occasion. Young virgins first cleared and levelled the ground with a sacred spade, and then dug the holes to receive the four corner-posts. After this a large party proceeded to the mountain where the timber was to be cut, and after rites had been performed to propitiate the forest god, the virgins took the sacred axe and made the first cut. Labourers were afterwards sent to cut down, the timber and bring it in. On all similar occasions the virgins are represented as taking a sacred spade to dig the holes for the uprights. In the "Yamato-hime no Sei-ki" the foundation of the Sun-goddess' temple in Ise is thus described: "On the *hi-no-ye ne* day of the winter, tenth month of the 26th year, *hi-no-to mi*, they removed the From-heaven-shining-great-deity to the bank of the I-suzu-gaha in Watarai. This year Yamato-hime no Mikoto commanded Oho-hata-nushi no Mikoto and all the men of the eighty companies of the *mono-no-fu* to cut away the rough herbage and trees on the plain of I-suzu, to level the big stones and the little stones, to cut the timber standing in the big ravines and little ravines of the distant hills and near hills with the sacred axe of the Imibe, and bring it away, to offer the end to Yamatsumi and bringing out the central part to set up the sacred pillars with the sacred spade, to raise-up the cross-beams to the plain of high heaven, and widely plant the great HOUSE-pillars." It was important to propitiate the forest god beforehand. In the province of Tohotafumi, says Mabuchi, the woodmen, after cutting down a tree, break off a branch and stick it upright in the stump. Elsewhere the woodman lops off a branch, and setting it up in front of the tree, together with his axe, clasps his hands and bows down, in order to obtain permission to cut it down from the spirit which is supposed to inhabit it. Some such practice as this is alluded to in the text where the 'ends' are said to be offered to the god of the mountains.

* The Mirror and Sword are two out of the three precious objects regarded as the regalia of the Japanese sovereigns, the possession of which was the evidence of their title to reign. The third is a stone (or perhaps a necklace of stones), of what kind is not precisely known. Its existence was denied by the Imibe, and hence

*This word occurs also in *inaka* (rice-dwellings), the country districts; "sunika," dwelling-place; "kakureba," hiding place; and *yamaga*, mountain village.

the omission of it in this Norito, which had to be read by a member of their tribe. These treasures, commonly called the 'Three Kinds of Divine Treasures' (*San shiyo no Zhiñ-pau*, 三種之神寶) or 'Utensils' (*ki* 器) are mentioned in the *Ko-zhi-ki* on the occasion of Ninigi no Mikoto's descent, where they are called the *Yagaka no Moga-tama*, the *Kagami* and the *Kusa-nagi no Tsurugi*, the 'Ever-bright Curved-jewel,' the 'Mirror,' and the 'Herb-quelling Sabre.' In the *Ni-hoñ-gi* the names of the first two differ slightly, being *Yasaka-ni no Moga-tama*, *Ya-ta no kagami*. The Stone and Mirror are supposed to be identical with those which play such an important part in the episode of the Sun-goddess' retirement into the cave, when they were hung on the sacred *sakaki* bush, together with other offerings, as inducements to her to come forth again and shed the light of her countenance on the earth. In the latter passage of the *Ko-zhi-ki* the Mirror is called *Yata kagami*, the 'Many-angled Mirror.' *Ya-ta* is a contraction of *Ya-ata*, *ya*, which eventually came to mean eight, having originally been used to denote any large number, while *ata* may either be the root of *atama*, head, or *hata*, fin, from the resemblance in shape and position to the fin of the fish, looked on as a mere appendage to the body. A mirror, called *Yatama kagami*, which is figured in the *Gufi-shiyo Ruwi-zhiyuu*, vol. 28, f. 23, is circular, with a raised design not unlike the conventional form of the sacred lotus of the Buddhists.

The material of the sacred Mirror is said to have been iron. Although the traditional reading is simply *kane*, which might mean any kind of metal whatever, the Chinese character in the text is 鐵, iron, and by the Chinese character we must be guided when there is any doubt as to the meaning. In the *Ko-go Zhifu-wi* the mirror is said to have been made of copper or bronze (銅), but this book is exactly a century later than the *Ko-zhi-ki*, and a hundred years after the discovery in Japan of copper. The use of that metal having by that time become well-known, the author of the *Ko-go Zhifu-wi* would naturally be inclined to suppose that it must have been the metal employed in making this mirror. The word handed down by tradition was simply *kane*, which the compilers of the earlier work understood was "iron," while the later author by the light of additional knowledge, interpreted it to mean "copper." In the *Ni-hoñ-gi* the mirror is called by the same name (*ya-ta kagami*), but nothing is said with respect to the metal of which it was formed. It would be curious if the Japanese should be proved to have possessed the knowledge of iron earlier than that of copper. According to one version of the legend in the *Ni-hoñ-gi*, it was suggested by Omohigane no kami that a likeness of the goddess should be made, and it is added that the image then made (i.e. a mirror) is now the deity of *Hi-no-mahe* in the province of *Ki-shiu*. The *Ko-go Zhifu-wi* also says that the mirror was made in the sun's likeness: "The first made was not quite perfect, but the second was beautiful. The former is the god of *Hi-no-mahe*, in the province of *Kii*; the latter is the great deity of *Ise*."

The full name of the Jewel is *Ya-saka no Maga-tama no iho-tsu mi sumaru no tama*. Motowori acknowledges that he cannot explain *ya-saka*. Numerous etymologies have been suggested, as, for instance, that *ya=iya*, and *saka* the root of *sakayeru*, hence the meaning 'ever-flourishing.' Again, that *maga-tama*, being taken to signify 'bent stone,' *yasaka* may be interpreted, according to the Chinese characters with which it is written, 'eight feet' or 'many feet' (reverting to the original meaning of *ya*), that being the length of the stone if it could be straightened. This seems rather far-fetched. Other conjectures are that *yasaka* was the name of the place whence the stone was procured, as well as that the *tama* being beads, *yasaka* (eight or many feet) denotes the length of the string upon which they were threaded. Hirata's derivation of *saka* from *sa-aka*, 'very bright, seems the best, and I have accordingly adopted it rendering *yasaka* by 'ever-bright. Motowori takes *maga-tama* to be 'curved jewel,' such as are from time to time dug out of the ground, and are shaped like a tiger's claw. They are formed of "nephrite, crystal, serpentine, agate or more rarely topaz, amethyst or jasper; soapstone and even clay has occasionally been used."—(*Henry von Siebold*.) Hirata, however explains *maga* to be a contraction of *ma kaga*, 'very sparkling,' *kaga* being the radical of *kaga-yaku*, 'to glitter, sparkle,' and identical with *kage*, 'brightness,' as in *tsuki-kage*, 'moonshine.' The former etymology is supported by the evidence of the Chinese characters used, though there is nothing to prove that the modern so-called *maga-tama* are identical with those spoken of in ancient writings, while the latter is convenient, because it allows us to include amongst *maga-tama* precious stones of other forms, especially the cylindrical beads popularly known as *kuda-tama*, as well as globular beads that have been found in tumuli. *Iho-tsu*, literally 'five hundred,' is merely used to express a great number. *Mi* is the honorific prefix, and *sumaru* is the equivalent of the Chinese 統 't'ung, to bring together, being in fact the same word as *sumeru* and *suberu* (see note 4 to the "Praying of Harvest"). The whole, therefore, signifies the 'ever-bright curved (or glittering) jewels, the many assembled jewels,' and the natural conclusion is that this member of the regalia ought to be a long string of, perhaps claw-shaped, stone beads.

The *Kusa-nagi* was originally called *Ame no Murakumo no Tsurugi*, the 'Sabre of the Assembled-clouds of Heaven.' In the *Ko-zhi-ki* there is a very curious account of its discovery. As a punishment for the misconduct which had been the cause of the Sun-goddess' retirement, a large fine was imposed upon *Susa-no-wo no Mikoto*, and he was banished from heaven. "So, being driven away, he descended on *Tori-kami* by the source of the river of *Hi*, in the province of *Idzumo*. Then there came a chop-stick floating down the river. So *Susa-no-wo no Mikoto* thought that people must dwell up that river, and went up it in search of them. There he found an old man and an old woman, two of them, who had placed a young girl between them, and were weeping. Then he asked, 'Who are you?' Whereupon the old man replied, saying: 'I am a god of the

earth, the child of Oho-yama-tsu-mi no Kami (the god of mountains). My name is called Foot-stroker (Ashi-na-dzu-chi) and my wife's name is called Hand-stroker (Te-na-dzu-chi), and my daughter's name is called Miraculous-rice-field-sun- maiden (Kushi-inada-hime).' Again he asked. 'What is the reason of your weeping?' He (the old man) answered and said: 'My daughters were originally eight young girls, but the Eight-forked Serpent of Koshi came every year and devoured them, and I weep because it is now the time for him to come.' Then he (the god) asked, 'What is his form like?' He answered and said, 'His eyes are red-glistening, his body is one, with eight heads and eight tails, and on his body grow moss, *hi* and *sugi* (Chamaecyparis and Cryptomeria). His belly extends over eight valleys and eight hills, and if one looks at his belly, it is all constantly bloody and inflamed.' Then Haya-Susa-no-wo no Mikoto said to the old man, 'If this is your daughter, will you offer her to me?' He replied, saying, 'With respect, but I do not know your august name.' Then he replied, and said, 'I am the dear elder brother of the From-heaven-shining-great-deity, and have just descended from heaven.' Hereupon Ashi-na-dzu-chi-no kami and Te-na-dzu-chi no kami said, 'If that be so, with respect (i. e., we obey), we will offer [her to you].' So Haya-Susa-no-wo no Mikoto transformed the young girl into a many-and-close-toothed comb, which he stuck in his hair, and then said to them, 'Brew some eight-fold filtered beer. And make a fence round about, and in that fence make eight gates, and at each gate tie together a bench, and on each bench place a beer-vat, and in each vat pour beer, and wait.' And when they had thus prepared [every thing] in accordance with his bidding, the Eight-forked serpent came truly as [the old man] had said. Then it dipped a head into each vat and drank the beer. And thereupon it became drunk with drinking, and all [the heads] lay down and slept. Then Haya-Susa-no-wo no Mikoto, drawing the sword of ten hand-breadths [length] which he wore, cut the serpent in pieces, and the Ili river turned into blood and flowed on. Now, when he cut the middle tail, the edge of his sword broke. Thinking it strange, he took the point of his sword, thrust, split and looked, and there was a keen-cutting blade [within]. So he took this sword, and thinking it a strange thing, sent it up with a message to the From-heaven-shining-great-deity. This is the 'herb-quelling sword' (*Kusanagi no tachi*). Thereupon Haya-Susa-no-wo no Mikoto sought for a place in Idzumo where he might build a HOUSE. So he came to the place called Suga, and said this: 'Having come to this place my HEART is pure,' and there he built a HOUSE. Wherefore that place is yet called Suga. When this great god first built the HOUSE of Suga, clouds rose up from the place. So he made a SONG, and that SONG was:

Many clouds arise.
The manifold fence of the forth-issuing clouds
Makes a manifold fence
For the spouses to be within.
Oh! that manifold fence.

"Then he called that Ashi-na-dzu-chi no kami, and said to him, 'Thee do I appoint chief of my HOUSE', and also he gave him a name, calling him Inada no miya-nushi Suga no yatsu-mimi no kami."—(*Ko-shi-ki*.)

In the Ni-hō-gi version of the myth the locality is placed in the province of Aki, and the parents of the maiden are called Ashi-nadzu-te-nadzu and Inada no miya-nushi. They besought Susa-no-wo no Mikoto to protect their new-born babe from the serpent, and by his orders made eight jars of wine from the fruits of trees, which he poured into the mouths of the serpent, and the monster became an easy victim. The sword used by him in slaying the serpent was called "Worochi no Aramasa" the Rough-perfect-one of the Serpent, and is said to be worshipped as a god at the ancient temple of Furu in Yamato. In another account this sword is called "Worochi no Kara-sabi," the Foreign-spade of the Serpent. A third version given in the Ni-hō-gi differs considerably, but is worth translating chiefly on account of its connecting Susa-no-wo with Korea, and showing that tradition affords ground for conjecturing that the original civilisers of Japan crossed over to Idzumo from that country. This version is as follows:

"Susa-no-wo no Mikoto's conduct was indecent, wherefore all the gods imposed upon him a penalty of a thousand tables [of offerings], and finally banished him. Then Susa-no-wo no Mikoto, taking with him his child Iso-takeru no Kami, descended into the country called Shiraki, and dwelt at a place called Soshimori. Then he commenced to speak, and said: 'This is a place in which I do not desire to dwell,' and consequently making a boat of clay, he embarked in it, and going across eastwards, arrived at Mount Tori-kami, which is at the source of the river Hi, in the province of Idzumo. At that time there was a serpent which swallowed human beings. So Susa-no-wo no Mikoto cut the serpent with the sword *Ama-no-hawae-giri* (the "Heavenly fly-cutter"), and cutting the serpent's tail, its edge broke. So he split up [the tail] and looked, and within the tail there was a strange sword. Susa-no-wo no Mikoto said, 'I must not make this my private property,' and sent his descendant in the fifth generation, Ama-no-fuki-ne no Kami, and offered it to Heaven. This is now called the *Kusa-nagi no Tsurugi*. When first Iso-takeru no Kami descended from heaven, he brought down a quantity of seeds of trees, but instead of planting them in *Kora kuni* (韓地) he brought them all back, and eventually sowed them all over the Great Many Island Country, beginning from Tsukushi, and made the mountains green. Wherefore Iso-takeru no Mikoto was called Isawoshi no Kami, 'The God of Merit,' and he is the great god who dwells in the province of Kii."—(*Ni-hō-gi*.)

The Sword, Mirror and Jewel (or Jewels) were brought to Japan by the ancestor of the Mikados, the mythical grandson of the Sun-goddess, Ninigi no Mikoto. In delivering the Three Sacred Treasures to him, the Sun-goddess said: "Look upon this mirror as my SPIRIT, and worship it as if you were worshipping my actual presence."—(*Ko-shi-ki*.) One version of the myth which is given in the Ni-hō-gi makes the Sun-goddess deliver the precious mirror of her son Oshi-

ho-mimi, with almost the same words, adding an injunction to keep the mirror always in the same house and on the same raised floor (*toko*) with himself. And this was actually done by the Mikados down to the reign of Su-zhiñ Tefi-wau, when, as the Ni-hoñ-gi says: "In the 6th year some of the people abandoned their homes, others rebelled, and the state of things was such that it was not to be remedied by the virtue [of the Mikado]. Wherefore he rose early in the morning and in the evening was solicitous, and besought punishment from the gods. Before this the two gods Ama-terasu Oho-kami and Oho-kuni-mi-tama, of Yamato, had both been worshipped within the RESIDENCE of the sovereign. But now fearing the might of these deities, he felt uneasy at living with them, wherefore he committed Ama-terasu Oho-kami to the charge of Toyo-suki-iri-hime no Mikoto, to worship at Kasa-nuhi no Sato (the Village of the Hat-makers) in Yamato, and there he built a stone-walled brushwood hut (*shiki himorogi*), and he entrusted Oho-kuni-mi-tama of Yamato to Nu-na-ki-iri-bime no Mikoto to worship, but Nu-na-ki-iri-bime no Mikoto's hair fell off and her body wasted, so that she could not worship."—(*Ni-hoñ-gi*.)

The Ko-go Zhifu-wi says: "In the reign of Shiki no Midzugaki (i.e., Su-zhiñ Tefi-wau), fearing at last the power of the god, and not feeling at ease in the same palace, the Mikado ordered the Imiba tribe to bring the two families descended from Ishi-kori-dome no kami and Ama-mi-hitotsu no kami, to cast a new mirror and make a new sword, to be the EMBLEMS to guard his person, and these are the mirror and sword which are offered to the Mikado at his accession as the divine symbols. At the same time he built a stone-walled brushwood hut at the Village of the Hat-makers in Yamato, and removing thither the From-heaven-shining-great-deity and the Herb-quelling sword, ordered the princess Toyo-suki-iri hime no Mikoto to worship them. On the evening of the removal the people of the palace all came and feasted throughout the night, singing:

*Miya-bito no
Oho-yo sugara ni
isa tohoshi
Yuki no yoroshi mo
oho yo sugara ni."*

The Yamato hime no Mikoto no Sei-ki (倭姫 命世記) is the history of the Mirror and Sword from the time they left the Mikado's Palace until they were finally established on the banks of the Isuzu-gaha in Ise, at the present Nai-kuu Temple. After the first priest-princess had been in charge of the sacred symbols for some fifty-three years, in the course of which she had frequently removed them from one site to another, finding herself getting old and feeble, she delivered them into the care of her niece, Yamato-hime, a sister of Kei-kau Tefi-wau, who wandered about with her trust until the 26th year of Suwi-nifi Tefi-wau (B. C. 4 according to the popular chronology), when she settled down in Ise at a spot indicated by a revelation from the Sun-goddess.

This princess appears to have lived to a great age, for she is still found as the high priestess of the Sun-goddess' temple in the 28th year of Kei-kau Tei-wau. Here she was visited by Yamato-dake no Mikoto, when on his way to subdue the barbarians of the east. She lent him the sacred sword for use against the enemy, and it was an incident of his campaign that gave to the weapon the name of "Herb-quelling Sabre." On his return he left the sword at Atsuta in Wohari, where a temple was built for it, which still exists, and is well-known to travellers. The story is recounted in the *Ko-zhi-ki* as follows: "Now when the sovereign again commanded Yamato-dake no Mikoto, saying, 'Subdue and pacify the violent gods and disobedient men of the twelve eastern roads,' and sent him, attaching to him the ancestor of the Omi of Kibi, whose name was Mi-suki-tomomimi-take hiko, he gave him a many-fathom-long spear of *hihira-gi* (*Olea aquifolia*). So when he departed, having received the command, he came into the House of the great DEITY of Ise, and worshipping the court of the deity, said to his aunt Yamato-hime, 'The sovran's augustness apparently desires that I should die [as] quickly [as possible], for after he had sent me to take the unsubmissive men of the west, as soon as I came up back, before any interval has elapsed, without bestowing on me any fighting men, he now sends me to subdue the unsubmissive men of the twelve circuits of the east. Consequently, I think he certainly desires me to die [as] quickly [as possible].' When he went away, having spoken thus with grief and weeping, Yamato-hime no Mikoto bestowed on him the 'Herb-quelling blade,' and also bestowed on him a BAG, and bade him open the mouth of the bag on an emergency. So, coming to the province of Wohari, he entered into the house of Miyasu hime, ancestress of the Miyatsuko of Wohari, and thereupon thought to marry her, but thought again that he would marry her when he came back again, and having entered into a promise, went forth to the eastern provinces and subdued and softened all the turbulent gods and unsubmissive men of the mountains and rivers. And when he came to the province of Sagamu, the Miyatsuko of that province lied to him, saying, 'There is a lake in this province, and the god who lives in that lake is a very turbulent god.' So when he entered into the prairie in order to visit that god, the Miyatsuko of the province set the prairie on fire. So knowing that he had been deceived, he opened the mouth of the bag which his aunt Yamato-hime no Mikoto had given him, and looked [into it], and there was a steel in it. So he first mowed away the herbage with his sword, and with the steel he struck fire, and kindling a counter-fire, set it [the herbage] on fire and drove-back [the other fire], and returning forth killed and destroyed all the Miyatsuko of that province. He then set them on fire and burnt them. Wherefore [that place] is now called Yaki-dzu."—(*Ko-zhi-ki*.)

In the *Ni-ho-gi* version, the prince, after first suggesting that the charge of subduing the rebels should be entrusted to his feeble brother Oho-usu no Mikoto, finally offers to undertake the task himself. The Mikado appointed him to command the expedition, and describes to his son the savage enemies which he

would have to encounter, and says: "I have heard that the Eastern barbarians have a rough and violent disposition, and make violence their chief pursuit. Their villages have no chief and their hamlets no heads, but every one encroaches on his neighbour's boundary, and they all rob one another. In the mountains, too, there are evil gods, and in the open country wicked demons who obstruct the roads and block up the paths, causing great annoyance to others. Amongst the eastern barbarians the Yemishi (Prawn barbarians) are the strongest. Male and female dwell together promiscuously, and there is no distinction between parent and child. In the winter they lodge in caves and in the summer dwell in huts. They wear skins and drink blood. Brothers are suspicious of each other. Their ascending the hills is like the flight of birds, and their walking through the herbage is like the running of quadrupeds. If they receive a favour they forget it, but if they suffer an injury are certain to requite it. For this reason they conceal arrows in their hair and swords underneath their clothes. Sometimes they assemble in bands and harry the frontier, or spy the peasants at their work and carry them off. If attacked, they hide in the herbage; and if pursued, enter the hills. For this reason, from ancient times till now they have not been affected by the monarch's teaching." [It would appear from this that these Yemishi, the modern Yezo or Ainos, were only one tribe out of many, but in nearly all passages of the ancient chronicles, where savages are mentioned, the term Yemishi is used. This name is said to have been given to them on account of the resemblance in appearance between their hairy faces and the prawn's head.] The Mikado then proceeds to extol the qualities which seem specially to fit his son for the undertaking, and he sets forth with two companions and a cook called Seven-span-shin (Nana-tsuka-hagi). On his way he calls upon his aunt in Ise, and upon his saying that he is going to fight the savages, she gives him the sword, bidding him to be diligent in the performance of his duty. When he reaches the province of Suruga, the local rebels pretend to submit, and tell him a story about a prairie full of deer, who are so numerous that their breath resembles a mist, and their legs a plantation of young trees. He falls into the trap, and goes off to hunt the deer on the prairie, whereupon the rebels set fire to the herbage with the intention of destroying him. He pulls out a flint and steel, kindles a counter fire, and so escapes. Another account is that the sword, Murakumo, which he wore, of itself left the scabbard and cut down the herbage all round, thus enabling him to escape, whence it was re-named Kusa-nagi, Herb-queller.—(*Ni-hon-ki*.)

On returning victorious from his expedition, the prince turned aside to the dwelling of Miyasu-hime in Wohari, and married her. After a month's stay, he departed, leaving the sword with her as a pledge that he would send for her as soon as he reached his home at the capital, telling her to keep it as a precious treasure, but met with his death when engaged in an adventure with the god of Ibuki yama and she never saw him again. Miyasu-hime fulfilled his injunctions, and laid

the sword in the couch which the prince had occupied, but the weapon soon manifested its divine character by working miracles in favour of those who prayed to it, and she finally resolved to build a temple for its safe keeping. To this the name of *Atsuta*, "Hot-field," was given, from the circumstance of a tree which stood there having burst into flame, and so fallen prone into the swampy soil of a rice-field, where it continued to burn and so heated the ground.—(*Ni-hō-n-gi*).

This concludes the supernatural part of the history of the regalia.

*The reader of the *Norito* thus makes the gods refer to the throne in the Hall of Audience.

**Hi-tsugi*, written 日嗣, by following closely the meaning of the Chinese characters, may be interpreted either 'sun's succession' or 'sun's successor,' in the latter of which senses it is usually understood by modern writers. In that case the phrase *Ama-tsu hi-tsugi* is in apposition to *Oho-ya-shima Toyo-ashi-hara no midau-ho no Kuni*. It has been, however, suggested that disregarding the strict meaning of the Chinese characters, *hi-tsugi* may be taken as if it were written 日次, 'succession of days,' i.e., continuation of existence, governed by *yorodzu chi aki naga abi ni* (where in modern Japanese we should have *ni shite* instead of simply *ni*), 'making the celestial continuation of days a myriad thousand autumns of long autumns,' i.e., live forever. Another way of writing this word is 日繼, as in *Ko-zhi-ki Den*, vol. 14, f. 36. Motowori here proposes to explain *tsugi* by 給 'to give,' and to interpret *Ama-tsu hi-tsugi shiroshimesamu* as equivalent to *Oho mi kami no tsugi-yosashi-tamafu ine wo mochte kashiku mi ke wo shiroshimesamu*, literally, 'shall enjoy the food prepared from the rice-plant bestowed upon him by the great goddess,' or more shortly, 'enjoy the gift of heaven's sun.' But against such a theory there is the fact that *ama-tsu hi-tsugi* is the traditional reading of such Chinese expressions as 天樂, and 騰極.

¹ *Oho ya shima Toyo ashi-hara no midau-ho no kuni*. The first part of this honorific and descriptive title of the Japanese realm, *Oho ya shima*, is explained in a note on p. 424 of Vol. VII. *Toyo* is an honorific which may be variously rendered by 'flourishing,' 'luxuriant,' 'abundant,' 'powerful,' according to the context. *Ashi* is perhaps *Phragmites Roxburghii*, and *hara*, rendered 'prairie' or 'moor,' means any wild uncultivated ground. When the name of a plant or tree is prefixed to it, it then means a tract of ground chiefly covered with that species, as for instance *matsu-bara*, a pine wood. *Ashi-hara* is therefore ground covered with the reed known as *ashi* (also called *yoshi*). Japan is sometimes called *Ashi-harano naka-tsu kuni*, the country in the middle of reed-covered wilds, which perhaps may have been a good description of the country as it appeared to the eyes of its first settlers when unreclaimed swamps covered the flat ground now cultivated as rice-fields. Some writers suggest that *naka-tsu kuni* should be understood as meaning 'Central region,' and that it was adopted in imitation of the Chinese 中 國, central region or "Middle Kingdom." In the compound here used it must

not be supposed that *Toyo* refers to the luxuriance of the reeds but it is rather to be taken as an epithet of the country. *Midau* is found in the modern colloquial in the word *midau midau-shii*, applied to anything that is both young, fresh-looking and beautiful, the essence of the idea conveyed by it being youthful freshness. It would not be applied to anything old, however beautiful the thing might be. *Ho* is the ear of the rice-plant, and the most general signification that can be given to it is 'spike.' (See note 17, p. 188 of Vol. VII.) Hence we get as the equivalent of the whole, 'Great Many islands, the luxuriant reed-plain region of fresh-young spikes.'

* This means the deliberations amongst the gods, assembled in Council by the Sun-goddess and Taka-mi-musubi no Mikoto, to consider what measures should be adopted for the conquest of Japan, which was then inhabited by the descendants of Susa-no-wo no Mikoto. In Note 4 the myth of his settlement in Idzumo has already been related, and also his marriage with Kushi-inade-hime, who is probably a personification of agriculture. The seventh in descent from the pair, counting both extremes, was Oho-kuni-nushi, also called Oho-na-muji. "He had a large number of brothers, but all left the country to him, the reason of which was as follows: All of them wanted to marry Yakami hime of Inaba, and going to Inaba in company, they took him with them as a servant to carry their bag. When they came to Cape Keta (in Inaba) they found a perfectly bald hare lying on the ground, and addressed it, saying: 'You are to bathe in the brine, and lie upon the spur of a high mountain breasting the breeze,' and the hare did as they bid him. As the brine dried upon him, the skin was split all over his body by the wind, and he lay there weeping with pain. Oho-na-muji, who came by last of all, seeing the hare in this plight, asked him why he lay there weeping. The hare replied: 'I was in the Island of the Offing and wished to cross over to this land, but having no means of doing so, cheated the sea sharks (*wani*), saying: I should like to enter into a rivalry with you as to which of us has the largest tribe. If you will bring all your tribe with you, and let them lie in a row from this island to Cape Keta, I will tread on them, and count them as I run across, thus learning which of our tribes is the largest. When I said this to them, they were deceived, and lay down in a row, and I treading on them, counted them as I came across. Just as I was about to land, I said: You have been cheated by me, and as soon as I had finished speaking, the very last of the sharks seized me and stripped off my clothing. As I was lamenting and weeping thereat, the many gods who preceded thee commanded me to bathe in the brine, and to lie exposed to the wind. And when I did as they had told me, the whole of my body was hurt.' Thereupon Oho-na-muji no Kami bade the hare go quickly to the mouth of the river, and after washing his body with the fresh water, to collect the pollen of the sedges which grew in the stream, and spreading it on the ground, to roll upon it, so that his body would be restored. And [the hare] having done as he was bid, his body became as before. This was the

'White hare of Inaba,' and even now they call it the 'Hare god.' The hare then said to Oho-na-muji: 'These many gods shall certainly not get Yakami hime, but thou shalt, though thou hearest the bag.'

The scene then changes to the abode of the damsel, who rejects the suit of the brothers, and declares her preference for Oho-na-muji. The disappointed suitors determined to take the life of their fortunate rival, which they did by rolling a huge red-hot stone down hill to Oho-na-muji, who supposed it to be the wild boar for which they had told him to be on the look-out. The ruse succeeded, and he was burnt to death. His mother appealed to the celestial gods, who sent down Kisa-gahi hime and Umugi hime (the shells called *aka-gahi* and *hama-guri*). The first calcined her shell, while the second brought water in hers, and they made a paste with which they besmeared the burnt corpse. By this process he was restored to life again, and made much more beautiful than before. Next his brothers beguiled him into the forest, where they made him pass through the split trunk of a tree, in which they had inserted a wedge, but as soon as he was in the middle of the tree they suddenly withdrew the wedge, so that he was caught as in a trap. His mother rescued him, and to save him from their machinations, sent him to the care of Ohoyabiko, who lived in the province of Kii, and was probably related to the ruling family of Idzumo. After that he visits Susa-no-wo in the infernal regions, and after many adventures there, finally returns with a famous sword, bow and arrows, which have the power of conferring long life on their possessor. With their aid he slays his brothers, and becomes ruler of the whole country. While in the infernal regions he had married Suseribime, the daughter of Susa-no-wo, and now he takes as a second wife his previous love Yakami hime, who is afraid of the legitimate spouse, and takes to flight, leaving the child she had borne to him in the fork of a tree. By other women he begot a large number of children, amongst whom the most famous are Aji-shiki-taka-hiko-ne (the god of Kamo in Yamato), Shitateru hime and Koto-shironushi, and in conjunction with Sukuna-hikona he brings the country under cultivation.

Suddenly the Sun-goddess resolves to make a grant of the Luxuriant Reed-plain region of Fresh-young Spikes to her adopted child Masaka-a-katsu-kachi-haya-bi-ame-no-oshi-ho-mimi no Mikoto, and despatches him on the journey downwards. Taking his stand on the Floating Bridge of Heaven (which formed the means of communication between heaven and earth in those days) he observed that the earth was violently disturbed, and straightway returned to heaven. Upon this Take-mi-musubi no kami and Ama-terasu-oho-mi-kami "assembled all the many hundreds of myriads of gods by the bed of the Peaceful River of heaven, and spoke thus to Omohi-gane no kami: 'This region in the midst of the reed plains has been granted by us to our child to rule over. We see that the country contains countless gods of great energy who behave turbulently, and ask you what god shall we send down to subdue them.' Then Omohi-gane no kami and all the many myriads of gods took counsel, and advised that Ame-no-hohi no kami should

be sent. So Ame-no-hiko no kami was sent, but he sought to curry favour with Oho-kuni-nushi, and three years passed without his returning to make a report." —(*Ko-zhi-ki*). In the *Nihon-gi*, the god with the long name, which is usually shortened to Ama-no-oshi-ho-mimi, marries a daughter of Taka-mi-musubi, and begets Ninigi no Mikoto. Taka-mi-musubi was very fond of his grandson, and resolved to make him prince of Ashi-hara no Naka-tsu kuni. "But in that region were gods who glittered like the fire-fly's light, and bad gods who buzzed like bees, besides whom there were plants and trees which could speak. Taka-mi-musubi no kami therefore assembled the gods (八十諸神), and said to them: 'I want to subdue the gods of Ashi-hara no Naka-tsu kuni. Whom would it be best to send? Let none of you conceal his opinion.' All replied: 'Send Ama-no-hohi no Mikoto, for he is a valiant god, and it would be well to try him.' So Taka-mi-musubi no Mikoto deferred to their advice, and sent down Ama-no-hohi no Mikoto to conquer the country. This god, however, flattered and cajoled Oho-na-muji no kami, and three years passed without his making any report."

The *Ko-zhi-ki* says that under these circumstances Taka-mi-musubi no kami and Ama-terasu-oho-mi-kami again asked the gods whom they should send, seeing that the former messenger had not returned. Omohi-gane no kami suggested the name of Ame-waka hiko who was accepted. Armed with a deer-bow and winged arrows, the gift of the gods, he descended on to the earth, where he married Shita-teru hiru hime, one of Oho-kuni-nushi's children, hoping to inherit the kingdom, and eight years passed without anything being heard from him. A council of the gods was again held to determine who should be sent to inquire the reason of the delay, and the result was the despatch of a pheasant, whom the Supreme Pair commanded to go and ask Ame-waka hiko for an explanation. "So the pheasant descending to the earth, perched upon the umbrageous *Ratsura* outside the gate of Ame-waka-hiko's house, and repeated to him what the heavenly gods had bid him say. Thereupon Ame no Sagume (an evil spirit) said to him: 'The voice of that bird is very ugly; shoot it.' So he took the bow and arrow given to him by the heavenly gods, and shot the pheasant, and the arrow passing through its bosom, flew back to heaven and came where Ama-terasu Oho-mi-kami and Takagi no kami were sitting in the bed of the Peaceful River. Takagi no kami is another name for Taka-mi-musubi. Taking up the arrow and looking at it, he saw blood on its feather, and said: 'This was the arrow given to Ame-waka hiko.' Then showing it to all the gods, he said: 'If this arrow came hither after Ame-waka hiko, faithful to the command laid upon him, had shot the wicked gods, let it not strike him, but if he has an evil heart, let Ame-waka hiko die.' With these words he took the arrow, and thrusting it downwards through the hole by which it had entered, sent it back. It struck Ame-waka hiko on the top of his breast, as he was sleeping on his couch, and killed him.

"Then Ama-terasu Oho-mi-kami said: 'What god shall we now send?'

Whereupon Omohi-gane no kami and the other gods said: 'Send Itsu no Wohabari no kami, who dwells in the heavenly rock-built house near the source of the Peaceful River of Heaven. Or if not him, then send Take-mika-dzuchi-no-wo no kami, the son of that god. But as Ame-no-Wohabari no kami has turned aside the waters of that river and blocked up the road, no other god can get to him. Send, therefore, Ame-no-kaku no kami.' So she sent Ame-no-kaku no kami to ask Ame-no-Wohabari no kami, who said: 'I obey. But you should send my son Take-mika-dzuchi no kami,' and he gave [his son]. So Ama-terasu Oho-mi-kami attached Ame-no-tori-fune no kami to Take-mika-dzuchi no kami, and despatched them down to the earth."

The two gods descended to the province of Idzumo, and obtained the submission of Koto-shiro-nushi (see. p. 122 of Vol. VII), and the original proceeds to say: "So they asked Oho-kuni-nushi: 'Your son Koto shiro-nushi no kami has thus spoken; have you any other son who wishes to speak?' He replied: 'There is my son Take-mi-na-gata, but none other,' and as he thus spoke, Take-mi-na-gata came up, bearing on the tips of his fingers a rock such as a thousand ordinary men would be required to move, and saying: 'Who is it that thus comes to our country and secretly talks? Come, I will have a trial of strength with you. To begin with, let me take your hand.' So Take-mika-dzuchi no kami let him take it, whereupon it changed into an erect icicle, and then into the edge of a sword, which frightened him so that he drew back. After that Take-mika-dzuchi asked permission to take Take-mi-na-gata's hand, which he grasped and crushed like a young reed, and flung roughly from him. Take-mi-na-gata fled, and the other pursuing him to the lake of Suwa, in the province, Shinano, was about to kill him, when Take-mi-na-gata said to the god: 'I submit. Do not kill me. I will never leave this spot, rebel against the commands of my father Oho-kuni-nushi no kami, nor violate the promise given by Yahe-koto-shiro-nushi no kami, but will surrender this land in accordance with the commands of the CHILD of the heavenly gods.'

"So they returned, and asked Oho-kuni-nushi no kami, saying: 'Your son Koto-shiro-nushi no kami and Take-mi-na-gata no kami have declared that they will not violate the commands of the CHILD of the heavenly gods. What are your feelings?' He replied, saying: 'Just as my two sons have said, I too will not violate them. In accordance with the (heavenly) command, I will give up this reed-plain central region. But as to my place of residence, if you will make stout the HOUSE pillars on the bottom-most rocks, and make high the cross-beams to the plain of high heaven, like the rich and sufficing NEST where the CHILD of the heavenly gods enjoys the succession of heaven's sun, and will order matters well, I will hide in the many road-windings (i.e., the abode of the dead) and serve him. And if my children, the numberless gods, serve under the guidance of Yahe-koto-shiro-nushi no kami, there will be no disobedient gods.' And having said this he disappeared."—(*Kin-shi-ki*.)

In the Ni-hō-gi version, Take-mika-dzuchi is accompanied by Futsu-nushi instead of Ame-no-tori-fune. They learn from Oho-kuni-nushi (who in this chronicle is called Oho-na-muji) that it is necessary to obtain the consent of his son Koto-shiro-nushi, and despatch a messenger to the latter, who at once gives in his submission and disappears. Upon the messenger's return with this information, Oho-na-muji announces his own determination to depart, in order to prevent the gods of the country from offering resistance, and having delivered to them the spear with which he had originally acquired his donations, he disappears.

"So they built a heavenly residence at Tagishi no Obama, in the province of Idzumo, and Kushi-ya-tama no kami, the grandson of Minato no kami, was appointed cook, and offered up heavenly cookery. Then, after prayers had been offered, Kushi-ya-tama no kami ('god of miraculous and numerous offerings') changed into a cormorant, and entering the bottom of the sea, took clay from the bottom in its mouth and made many heavenly dishes, and cutting a seaweed stalk made a fire-mortar, and made a pestle out of *Kōmo* (a kind of seaweed), and drilling out fire therewith, said: 'The fire which I have drilled will I burn until the soot of the rich and sufficing heavenly new nest of the PARENT Kami-musubi in heaven hangs down many hand-breadths long, and the earth below will I bake down to its bottom-most rocks, and stretching a thousand fathoms of paper-mulberry rope, will draw together and bring ashore the fisherman's large-mouthed small-finned *suzuki*, [and] will offer up the heavenly fish-food on bending split bamboos.'

"Then Take-mika-dzuchi went back up (to heaven), and reported how he had subdued and pacified the reed-plain central region."—(*Ko-zhi-ki*.) Everything was therefore ready for the descent of Ninigi no Mikoto.

⁹ Hirata reads *ihahi* 'felicitate,' apparently on the ground that it is the reading of 賀 no f. 23, col. 5. prescribed in the note of the original transcriber. It has no justification here.

¹⁰ For *chidari* and *tobu tori* consult *Ko-zhi-ki* Def., XIV., f. 39, and *Oho-barahi Go-shiyaku*, I, ff. 59 and 60.

¹¹ *Kikahi*. Mabuchi supposes this to be a corruption of *yuki-ahi*, meetings.

¹² Lit., dug, i.e., the holes for the pillars.

In the Japanese text the following gloss is here inserted: "This is the Spirit of Wood," and after the name of the second deity here addressed, is another: "This is the Spirit of the Rice-plant, commonly called Uga no Mi-tama. Just as, at the present day, in the hut of a woman in child-birth, pieces of split wood and bundles of the rice-plant are placed near the door, and then rice is scattered about the interior of the hut." These glosses are perhaps as old as the beginning of the 10th century, when the present collection of *norito* was made, or may be even earlier. The reference to the practice of removing a parturient woman to a hut built for the purpose, where the worship of the spirits of timber and the rice-plant was performed, and rice scattered about as a charm against evil spirits, shows that the ceremony was at one time observed universally upon

the erection of a new house, no matter what the station in life of its owner, and not exclusively at the inauguration of a palace belonging to the sovereign. *Yabune* has already been explained. *Kukuchi* is the old reading, for which *Mabuchi*, and others following him, have substituted *kukunochi*, without any good reason, as far as I can see. *Kukuchi* is probably the same word as *hukide*, 'to sprout forth.' *Toyo-uke-bime* is the Goddess of Food, to whom Ritual No. 3 is addressed. It has been suggested that this deity is primarily the Earth-goddess, *uke*, and *uke-mochi* in one of her other names, being taken in the sense of 'supporter.' If this be so, her worship here as the supporter of the foundation of the palace would be perfectly logical.

²⁴In the Ko-zhi-ki's account of Izanagi's lustration by bathing in the sea, after his return from visiting his dead spouse Izanami in the nether world, we read that "the name of the first god who was produced when he dived into the central current was *Yaso-maga-tsu-bi no kami* and next *Oho-maga-tsu-bi no kami*. These two gods were generated from the pollution contracted by him when he went to the dirty and ugly region (i.e., of the dead). And the names of the gods who were next generated to correct the evil were *Kamu-naho-bi no kami* and next *Oho-naho-bi no kami*, and next *Idzu-no-me no kami*." *Naho* is 'straight' (Latin, *rectus*) and *nahosu*, *nahoru* are the transitive verb and intransitive verb 'to straighten,' 'to correct.' *Bi* is evidently the same as in *maga-tsu-bi*, and perhaps in *musu-bi*, which forms part of the names of the Creators. (According to the *Yamato-hime* Sei-ki, *Kamu-naho-bi* and *Oho-naho-bi* are two names of one god, *Ibukido-nushi*, who is the 'Rough Spirit' of *Toyo-uke-bime*.) These were the gods to whom was assigned the task of counteracting all the evil of whatever kind, whether moral, physical, ceremonial or natural, that might arise in the world.

²⁵These are general expressions for female and male attendants. The *hite* rendered 'scarf,' was worn by the women, called *uneme*, who waited on the Mikado, the *tasuki* was a cord or sash passed over the shoulders, round the back of the neck, and attached to the wrists, to strengthen the hands for the support of weights, whence the name, which means 'hand-helper.' It was thus different both in form and use from the modern *tasuki*, a cord with its two ends joined which is worn behind the neck, under the arms and round the back, to keep the modern loose sleeves out of the way when household duties are being performed.

NO. 9—MIKADO MATSURI OR SERVICE OF THE GATES OF THE PALACE.

This service was held twice annually, but nothing is known of the ceremonies by which it was accompanied, beyond the fact that certain Virgin Priestesses of the Gates officiated in chief. Some remarks upon

the names of the two gods Kushi-ihama-do no Mikoto and Toyo-ihama-do no Mikoto, will be found in Note 31 to the "Praying for Harvest," to which nothing need be added here. Motowori suggests that some such introductory sentence as "He declares in the presence of the sovran gods of the GATES" has been omitted by a copyist's error from the MS. of the Yefi-gi Shiki, which seems very probable.

RITUAL.

[TRANSLATION.]

He says, with reference to declaring the NAMES Wonderful-rock-Gate's Augustness and Powerful-rock-Gate's Augustness, I fulfil the praises of the NAMES Powerful-rock-Gate's Augustness and Wonderful-rock-Gate's Augustness, because you deign to obstruct like innumerable piles of rock in the inner and outer GATES of the four quarters, prevent the servants of His Majesty from being poisoned and seduced by the wickedness which may be uttered by the god called Ame no Magatsuhi, who may come unfriendly and turbulent from the four quarters and the four corners, and because you guard when they come¹ from the top, and guard the bottom when they come from the bottom, and waiting repel, sweep and send them away, and refute them: in the morning open the gates, inquire and learn the names of the persons who come in and of those that go out, see and correct, hear and correct with divine-correcting and great-correcting² the faults and errors that may be committed by them, and cause them to serve peacefully and tranquilly.

NOTES.

¹ More literally 'go' (*yukaba*). From this it appears that the service was held at a temple situated just outside the Palace gates.

² I.e., in the same way as the gods called Divine-corrector and Great-corrector



HIDEYOSHI'S INVASION OF KOREA.

CHAPTER III.—NEGOTIATION.

BY W. G. ASTON.

[*Read June 14, 1881.*]

While their diplomatists were engaged in negotiating a formal Treaty of Peace, the three countries were now to enjoy a few years of precarious quiet. China and Japan were sincerely desirous of putting an end to the war, and the Koreans alone were reluctant that any compromise should be made with the enemy whom they so bitterly detested. Still graver obstacles, however, to the success of the negotiations were the complete mistrust with which each party regarded the two others, and the difficulty in bringing about any real understanding between the haughty Hideyoshi and a court whose sole idea of foreign relations then, and perhaps even now, was to accept graciously the homage and tribute of the outer barbarian, or to chastise his insolence when he proved contumacious. Nothing less would satisfy the Chinese than to place Hideyoshi in the position of a humble vassal, who sought by offering tribute to have his offences condoned, and Ikei was accused by the Koreans of systematically humouring the pride of his Government by keeping up the fiction that the Japanese were suppliants who offered their submission and sued for pardon. He was said to have always substituted in his reports to his Government the word 'submission' for 'peace,' the word actually used by the Japanese, and a document brought over by an envoy named Konishi Hida no Kami, who

accompanied Ikei back from Japan, was described to the Koreans as 'Hideyoshi's letter of submission.' Konishi proceeded with this letter as far as Laotung, where he was detained by order of the Chinese Government, who had heard of the expedition against Chinchu and were unable to reconcile it with Hideyoshi's pacific assurances. It was suspected that the document which he bore was a forgery of some of the Japanese generals who were tired of the war, and longed to return to their own country. Ikei did his best to smooth matters over, and his efforts were seconded by the famine which continued to rage, and which made the stay of either Japanese or Chinese in Korea extremely difficult. Towards the end of the year (1594) the Chinese withdrew from the country altogether. Most of the Japanese were also recalled, a small garrison being left in and about Pusan, and the King of Korea was at last enabled to return to his capital and take up his residence there. About this time he received a Chinese official who had been sent to impress on the Korean Government the necessity of making peace. The following characteristic specimen of the language held by this officer is preserved in the pages of the Korean historian Riu.

"The vehemence of the Japanese slaves when they invaded your country was like splitting bamboos. They established themselves in the three cities of Pingshang, Kaishŭng and the Capital: they took possession of eight or nine tenths of your land and people; they took your princes and ministers prisoners. Our Emperor in his indignation raised an army which in one battle took Pingshang and again advancing, captured Kaishŭng. At last the Japanese slaves abandoned the capital and fled, and sent back the captured princes and ministers. They have also restored your territory for two thousand *li*. Our money expenditure it is impossible to estimate, and our losses in men and horses have been very great. No further protection will be vouchsafed by the imperial Government to its dependency: the extreme kindness of the Emperor has already been carried too far. It is needless any more to transport supplies or to wage war. The Japanese slaves, in dread of our might, have begged for peace and have asked permission to render tribute. The Emperor has been graciously pleased to accept their tribute, and to receive them into the number of his outer vassals. They will all be driven beyond the sea, and will not return to attack you. The

most far-sighted policy on your part is to rest from war and to unravel confusion. Your supplies are exhausted: your people devour one another. On what do you place reliance when you wish for war? We will no longer supply your country with stores, and if we cease to accept tribute from the Japanese slaves, they will assuredly turn their wrath against Korea, and bring your country to ruin. Would it not be better to take counsel beforehand? When Kow tsien² was beaten at Kwaike, would he not gladly have eaten the flesh of his enemy Fucha? Yet for a time he bore his disgrace, and contained his mortification, awaiting the time for his revenge. In that case, the prince became a vassal, the wife became a concubine. But here we have made the Japanese slaves ask leave to accept the position of vassals and concubines to the Central Land."

The 'tribute' to be paid by Japan to China is explained by an allusion in another work to a proposition of Hideyoshi's for the opening of a 'tribute-market' at Ningpo. In other words, Ningpo was to be opened to Japanese commerce, in consideration of a payment by way of customs duties. This proposal was ultimately rejected.

The Korean Government, after long hesitation, at last consented reluctantly to make peace. Konishi Hida no Kami, who had been detained all this time in Laotung, was now permitted to proceed to Peking, where he gave his solemn adhesion to the three articles of peace thus briefly recorded by Riu.

I.—To grant investiture—not tribute.

II.—All Japanese to leave Korea.

III.—Never again to invade Korea.

Konishi's language on this occasion has been fully reported, and is eminently suggestive of the well-known witty definition of a diplomatist. One of his most astounding assertions was that the *Tennô* (Mikado) and *Kokuô* (Shô-gun) of Japan were one and the same person. In spite, however, of the so-called treaty signed by Konishi, peace was still far from being assured. The Japanese generals at Pusan apparently considered that they were not bound by it, for when the Chinese envoys arrived in Korea on their way to Japan to carry out

² Vide Mayers' Chinese Manual, Part I, §139 and 276.

the agreement by which Hideyoshi was to receive investiture as King of Japan, they found Pusan and some of the neighbouring towns still occupied by Japanese garrisons. The envoys protested against this failure to carry out the treaty, and said they were instructed not to leave Korea so long as a single Japanese soldier remained in the country. The Japanese consented to evacuate several of the castles held by them near Pusan, but insisted on retaining that city itself and one or two smaller places as a guarantee of the good faith of the Chinese, which on former occasions they had had reason to suspect. They agreed, however, to abandon Pusan also as soon as the Chinese ambassadors gave proof of their friendly intentions by coming into the Japanese camp. The junior ambassador did so in the 8th month of the year 1595, but the Japanese were not satisfied until the senior ambassador also trusted himself with them. No sooner had he done so than fresh difficulties were made. The Japanese generals now refused to give up Pusan without renewed instructions from Hideyoshi, and Konishi Yukinaga went to Japan for the purpose of consulting him. Konishi did not return until the first month of the following year (1596), but as there was still no definite order to withdraw the troops, Ikei left the two ambassadors at Pusan and went to Japan with Konishi to arrange the ceremonies, as he said, for the reception of the ambassadors. Nobody knew what the real object of his visit was. During his absence, which was very protracted, the chief Chinese ambassador, who was a timid man was persuaded by some one that the Japanese did not really want investiture, but that their object was to make prisoners of him and his friends, and to treat them with harshness and contumely. He was terribly alarmed, and fled from the Japanese camp at midnight disguised and unattended, leaving behind him even his seals of office. The next morning his flight was discovered by the Japanese, and parties were sent out in all directions in pursuit of him, but without success. He escaped by by-ways among the hills, suffering great hardships, until he at last reached Kiŭng-chu, from which place he journeyed back to his own country. His colleague remained quietly behind and reassured the Japanese, who at first did not know what to make of the sudden disappearance of the senior ambassador. On Ikei's return with Konishi, the castles of Sesukai and Takejima were given up to the

Koreans, leaving only Pusan in the hands of the Japanese. With this concession the Chinese ambassador seems to have contented himself, for after a little further delay, caused by the unwillingness of the Korean Government to appoint an ambassador to accompany the Chinese envoy, the embassy at length sailed from Korea. It consisted of the junior Chinese ambassador, with Ikei, and two Korean officers who accompanied the latter in a subordinate capacity. They landed at Sakai near Osaka on the 16th of the 8th month, 1596, and proceeded a few days later to Kiôto, where they arrived shortly after the great earthquake of that year.

Great preparations had been made for their reception, and at first it seemed as if everything was about to pass off harmoniously. The first discordant note was struck by Hideyoshi taking umbrage at the circumstance that the Korean princes had not come in person to thank him for their release, but had allowed themselves to be represented by officers of inferior rank. These officers were not admitted to his presence, and were excluded from the audience given to the Chinese in the Castle of Fushimi on the 2nd of the 9th month, when the ceremony of investing Hideyoshi as King of Japan was performed with great state in the presence of all his court. It consisted in presenting to him the patent of investiture, with a golden seal and a crown and robe of state.

Hideyoshi gave a banquet on the following day to the two Chinese ambassadors, at which he wore his crown and robe, and sat on a raised dais, the ambassadors being seated on a lower platform. The members of Hideyoshi's Court who were present also wore the robes and caps of honour presented to them by the Emperor of China.

After this entertainment, Hideyoshi retired to a summer-house in the garden of the Castle, where he had commanded two learned priests to meet him to explain the Patent of Investiture. He was himself not only ignorant of the Chinese written character, but despised it, and once declared that when his scheme of conquering Korea and China was carried out, he would compel those countries to adopt the Japanese phonetic system of spelling. Konishi, who was now in Kiôto, having accompanied the Chinese ambassadors from Korea, looked forward with great apprehension to the reading of the Patent, which

he knew well to be the critical moment of the whole proceedings. He took the precaution of having a private interview with the priests, and strongly impressed on them the expediency of modifying, in their translation of the document, any expressions which might seem calculated to wound Hideyoshi's pride. But they were too conscientious to accept this advice, and interpreted it faithfully. It ran as follows:—

"The influence of the holy and divine one (Confucius) is widespread; he is honoured and loved wherever the heavens overhang and the earth upbears. The Imperial command is universal; even as far as the bounds of ocean where the sun rises, there are none who do not obey it.

"In ancient times our Imperial ancestors bestowed their favours on many lands; the Tortoise knots² and the Dragon writing were sent to the limits of far Fusang (Japan), the pure alabaster and the great seal character were granted to the mountains of the submissive country. Thereafter came billowy times when communication was interrupted, but an auspicious opportunity has now arrived, when it has pleased us again to address you.

"You, Toyotomi Taira Hideyoshi, having established an Island Kingdom, and knowing the reverence due to the Central Land, sent to the west an envoy, and with gladness and affection offered your allegiance. On the north you knocked at the barrier of ten thousand *li*, and earnestly requested to be admitted within our dominions. Your mind is already confirmed in reverent submissiveness. How can we grudge our favour to so great meekness?

"We do therefore specially invest you with the dignity of King of Japan, and to that intent issue this our commission. Treasure it up carefully. Over the sea we send you a crown and robe, so that you may follow our ancient custom as respects dress. Faithfully defend the frontier of the Empire; let it be your study to act worthily of your position as our minister; practice moderation and self-restraint; cherish

² 善國寶記 gives several specimens of letters from the Emperor of China, among others one addressed to the Shō-gun Yoshinori, in which he is styled *koku ō* 國王 of Japan.

gratitude for the Imperial favour so bountifully bestowed upon you; change not your fidelity; be humbly guided by our admonitions; continue always to follow our instructions.

"Respect this!"

The Patent was accompanied by the following letter of instructions:

"We, in reverent obedience to the command of Heaven, rule over all countries. Our peaceful reign is not over the Central Land alone; we are not contented until there is none who is not happy throughout the whole world within and without the seas, wherever the sun and moon shine.

"You, Taira Hideyoshi of Japan, lately made war on Korea, a country which for two hundred years has been tributary to this Empire. The Koreans having appealed to us in their distress, our indignation flamed forth, and we despatched a body of troops to their assistance. But it was against our real wishes to resort to bloodshed, and when your general Toyotomi Yukinaga sent his messenger Fujiwara Yukiyasu (Konishi Hida no Kami) to explain the reason of your sending an expedition and making war, viz., that it arose in the first place from your desire to request investiture from this Empire, that, you had asked Korea to prefer this petition on your behalf but that that country had thrown obstacles in the way, and would not consent to communicate to us your wishes. This you said had excited your opposition and was the cause of troubling the Celestial troops. You showed regret for your error, and retired, giving up the royal capital of Korea and sending back the captured princes and grandees. You also presented a respectful memorial embodying the above-mentioned request.

"The general purport of your communications was reported to us by our ministers. But your people again attacked the Korean town of Chinchu, conduct which betrayed a feeling contrary to your protestations, and we therefore declined to give you an answer. A short time ago, however, you reiterated your request through King Riyeon of Korea, and it was further reported to us that the Japanese at Pusan had given no trouble for years, but were awaiting the arrival of the envoy of investiture, and showed themselves thoroughly respectful and loyal. For these reasons we specially summoned Fujiwara Yukiyasu to our

capital, where we assembled our civil and military officials in our Court, and caused them fully to investigate the facts. The original Treaty of three clauses was amended, and it was stipulated that all the Japanese at Pusan should now be withdrawn, leaving not a single man behind; that the matter would be considered as settled by the grant of investiture, the claim for a tribute-market being dropped, and that you would not again commit a breach of friendly relations by a second time invading Korea. When the true facts of the case were manifested, your respectful loyalty was at length proved; and we felt compelled to abandon our suspicions, and to rejoice that you join with us in doing good. We therefore first instructed Chin Ikei³ to proceed to Pusan, and to notify to your people that they must all return to their country, and afterwards sent a special embassy consisting of Ri Sosei³ (李宗誠) as chief, and Yô Hôkiô³ (楊方享) as assistant ambassador, with due authority to invest you, Taira Hideyoshi, as King of Japan, and to bestow on you the golden seal and robe appertaining to that dignity. We have also bestowed dignities on all your subordinate officials according to their respective merits, making a liberal distribution of our favours. We also make proclamation to the people of your country and enjoin on them to be obedient to your orders: let none presume to disregard them! Let your dynasty dwell in the land from generation to generation and rule over its inhabitants.

"The investiture was first granted to your country by our ancestor, Emperor Ching-tsu (1403-1425), so that this is now the second time of doing so. Our favour to Japan may well be said to be of old standing.

"Now that you have received investiture, sedulously observe the three articles of the Treaty; steadfastly maintain your singleness of heart; show your gratitude to this Empire by your loyal behaviour; by sincerity and justice preserve peace with all countries. In regard to the dependent savage tribes on your borders, be studious to apply measures of repression and restraint so as to prevent trouble from arising along your coasts. We trust that you will constantly endeavour to make the people of your sixty-six islands live together in harmony: let it be your aim to cause those who have been torn away from

³ Titles omitted in the translation.

their proper avocations to settle down peacefully, and give them an opportunity of being reunited to their parents and families. By so doing you will carry out our wishes, and will act in accordance with the will of Heaven above. With regard to the question of rendering tribute (i.e., the opening of Ningpo to foreign commerce), it is indeed a proof of your respect and fidelity. But our officers by the margin of the sea understand warlike defence. Their movements are uncertain as the winds and waves; stones and gems are hard to be distinguished.* Why should we exact a recompense from those who are already confirmed in the practice of submissiveness? Everything is now pardoned, and occasions of offence will be avoided in future.

"Respectfully follow our commands: let there be no deviation from them. Severe is the glance of heaven: resplendently bright are the Royal precepts.

"Respect this!"

The language of these documents at last brought home to Hideyoshi the real meaning of the *Hô-ô* (封王) or investiture. Konishi's fears that he would be displeased were realized to the full. He flew into a violent passion, exclaiming, "I don't want his help to be made King of Japan. What Yukinaga (Konishi) led me to believe was that the chief of the Mings was to acknowledge me as Ming Emperor." He tore off the crown and robes and flung them on the ground with the commission, and sent for Konishi, that he might cut off his head on the spot for his deception. He was somewhat pacified, however, by the priests, who pointed out to him that it was an ancient custom for the countries neighbouring to China to receive investiture from her, as she surpassed them all in civilization, and that it was really an honour to Hideyoshi that his fame and deserts had compelled so signal a recognition. Konishi, too, had no difficulty in showing that the three commissioners whom Hideyoshi had entrusted with the supreme control of the expedition were equally responsible with himself for everything that had been said and done, and he was accordingly allowed to escape;

* The meaning of this mysterious sentence is perhaps that the local mandarins of Ningpo were a turbulent, warlike class, who could not be depended on to conduct the commercial relations with the Japanese, and might mistake their peaceful traders for the pirates of that nation who then infested these seas.

but the investiture, as Hideyoshi now understood it, was more than he could reconcile himself to. He ordered the ambassadors to leave Japan at once without any answer or even the compliments to themselves and their sovereign demanded by eastern diplomatic usage. On reflection, however, he judged it politic not to carry his quarrel with China any farther just then, and allowed himself to be persuaded to give suitable presents to the Chinese ambassadors. All his anger was turned against Korea, which as usual was made the scape-goat. He vowed that he would never make peace with that unhappy country, and at once gave orders to prepare a fresh expedition. Even the heads of the two Korean officers were for a moment in danger. The embassy left Kiôto on the following day. At Nagoya, where they were detained by contrary winds, they were overtaken by a messenger bearing a letter from Hideyoshi, which they hoped might be an apology, but which turned out to be nothing but an enumeration of the wrongs which that meek and in-offensive personage had suffered at the hands of the Koreans, viz., when the Korean ambassadors came to Japan some years before, they had concealed the state of things in China—offence No. 1. At the request of Chin Ikei, the Korean princes had been released, but they had not come to render thanks in person; they had sent instead two officers of mean position—offence No. 2. The Koreans had for several years impeded the negotiations of peace between China and Japan—offence No. 3. On the return of the ambassadors to Korea in the 12th month of 1596, this document was communicated to King Riyen, who in great alarm appealed again to China for assistance to repel the new invasion which now threatened him.

A TRANSLATION OF THE "DOU-ZHI KEU."

(童子教)

"TEACHINGS FOR THE YOUNG."

BY BASIL HALL CHAMBERLAIN.

[Read June 14, 1881.]

The little treatise on morals, of which the following is a translation, has for several hundred years enjoyed great popularity in Japan. It is found bound up with another work of similar style and purport entitled "*Zhitsu-Go Keu*," or "The Teaching of the Words of Truth"; and, as the two are generally read together, it would seem most natural to include them both in one paper. This, however, has not been done, as a translation by the present writer of the "Teaching of the Words of Truth" has already been published elsewhere.* Very few remarks are needed by way of introduction. While the "Words of Truth" are ascribed (with what justice it would be hard to say) to the famous religious teacher Kuu-Kai or Kou-Bofu Dai-Shi, the composition, or rather compilation, of the "Teachings for the Young" is attributed to a Buddhist priest of less notoriety named Añ-Nēñ. This Añ-Nēñ is said, in a standard collection of biographies of Buddhist worthies entitled "*Geñ-Kau Shigaku-Shiyo*" (元亨譯書), Vol. IV, p. 8, to have been connected with the family of the well-known saint Deñ-Gen Dai-Shi, to have studied under Zhi-Kaku Dai-Shi at the great monastery

* Cornhill Magazine for August, 1876. Art. "*Jitsu-go-Kiyō*."

of Hi-Hei-Zaŋ, to have written a number of works commenting on the sacred books of the "Great Vehicle" (Mahāyāna) School, to have made investigations in the Sanskrit [Pāli?] language, and to have been nominated by the Mikado to the post of Rector of the temple of Guwañ-Giyau-Zhi (元慶寺) near Kiyau-to in the year 884. It is believed that the present treatise was composed as a "*Reader*" for the children who came to him there for instruction, all education being at that time in the hands of the Buddhist priesthood. Like the rest of the Japanese prose literature of that time, it is written in the Chinese language,—Chinese in which it is easy enough for a Chinaman to detect inelegancies and even errors, but which had and has a learned and solemn sound to the Japanese student, and especially to the Japanese child. The references made and the examples quoted are likewise without exception either Chinese or Indian. Several of the maxims have passed into current proverbs, and all of them are as familiar to every Japanese possessing a tincture of education as the stories and parables of the Bible are to ourselves. The language employed is so uniformly chaste that there is only one paragraph which it has been thought advisable to leave untranslated, in order to avoid shocking modern sensibilities; and even that paragraph is simply coarse,—not immoral in the proper sense of the word.

There are several editions of the "Words of Truth" and the "Teachings for the Young"; but three in the possession of the present writer offer little or no difference in the text, and seem even to have copied the greater portion of the commentary from each other or from some older authority. This commentary, though making no pretensions to great depth, is invaluable to the translator, as it gives the names of the Chinese Buddhist works (mostly versions from the Pāli or Sanskrit) from which Añ-Neñ transcribed a great part of his moral aphorisms; and, as the references to the Chinese Classics (all of which the translator has verified) are correct, it is to be presumed that the quotations from those much less accessible books are equally reliable. Besides this Japanese commentary, which he has perpetually quoted in his notes, and Dr. Legge's "Chinese Classics," the translator has made use chiefly of Dr. Eitel's "Handbook for the Student of Chinese Buddhism" and of the late Mr. Mayers' "Chinese Reader's Manual,"

both of them works to which every student must feel himself so greatly indebted that he can only long for the moment when, in the case of the former at least, a second edition may fill the lacunæ which occur in the first. The text of the "Teachings for the Young," translated as literally as the divergent genius of the English and Chinese languages will permit, is as follows:

"TEACHINGS FOR THE YOUNG."

If thou be seated in the presence of a superior, thou must not rise up abruptly: if thou meet him in the street, thou shouldst bend the knee and pass on.¹

If he summon thee, listen with deference, turning towards him with both hands folded on thy breast: respectfully, and not looking round to the right or to the left.

If he ask nothing, do thou answer nothing:² but if he address thee, then listen with reverence.

To the Precious Triad³ make the full three-fold obeisance, and worship twice before the Shin-tau Gods: to men make a single obeisance, but thy teacher and thy lord shalt thou lift up to thine head.⁴

¹The second clause of this paragraph is taken almost literally from the 禮記 or "Record of Rites" ("Rules of Demeanour" [曲禮] Div. I, Part I, Chap. I, ¶ XXIII).

²"Record of Rites" ("Rules of Demeanour," Part I, Div. I, Chap. I, ¶ XVI).

³The Sanskrit "triratna," or "ratnatraya," signifying Buddha, the Law, and, the Priesthood. Following the commentary, it may be remarked that, though a three-fold obeisance to the Triad is natural enough, there is no special reason for the number two in connection with the Shin-tau divinities. All that is meant is to show that the Buddhist objects of worship rank first, while at the same time the sound of the word *two* as opposed to *three* keeps up the parallelism of the verse. In the Yuwi-Ichi form of Shin-tau the worshipper claps his hands thrice when he goes to pray.

⁴Interpreted as meaning: "Thou shalt reverence them as much as to figuratively lift them up to thine head." The lifting of presents, etc., to the head as sign of respect may still be seen every day in Japan; and the common word for "to receive" (*chiyau-dai*, 頂戴) may perpetuate the memory of this custom even after the latter shall have died out under the influence of European manners. A man's teacher and his lord are of course to him the most to be venerated of all mortals. See also Note 41.

Be reverent when thou goest past a grave,⁵ alight from thin horse when thou goest past a Shih-tau shrine: when thou art near a Buddhist temple or pagoda, thou must not commit any unclean act;⁶ when thou art reading the sacred writings, thou must not do anything unseemly.

In the relations of men there is decorum;⁷ at the court there must be laws:⁸ if men be without decorum, there will likewise be transgressions among the multitude.

When thou art in the throng, speak not indiscriminately, and go away as soon as thy business is over: let nothing lead thee into breaking faith with thy friend, and depart not from thy word.

The man of many words is poor in deeds; he is like unto an aged dog that barketh at its companions: the idle man is eager for his food; he is like unto a tired ape greedy for fruit.⁹

The bold man shall surely fall into danger; he is like unto an insect that flieth into the flame in summer: the simple man¹⁰ shall not

⁵ Taken almost literally from the "Record of Rites" ("T'an Kung," Div. II, Chap. IV, ¶ XLVIII).

⁶ The commentator quotes a Buddhist Sūtra entitled "U-Hatsu Tei-Wau Kiyau" (優鉢經王經) in which it is said that he who commits any unclean act in the grounds of such an edifice will be born for five hundred lives into the Batsuba (拔波 Sanskrit ?) hell.

⁷ 禮 (Chin. li, Jap. rei). This character, whose full meaning no single English word properly expresses, is thus defined in Dr. Williams' "Syllabic Dictionary of the Chinese Language": "A step, an act, particularly acts of worship 事神, which will bring happiness; propriety, etiquette, ceremony, rites; the decent and the decorous in worship and social life; decorum, usage, vails."

⁸ I.e., the Sovereign must make laws for the government of the people.

⁹ The first words of this paragraph recall a remark of Confucius preserved in the "Family Sayings" (家語), where the sage says: "The superior man speaketh by his deeds; the vulgar man speaketh with his tongue." The comparison of the dog seems, says the commentator, to have been suggested by a maxim in the "Li Sao Ching" (離騷經) to this effect: "A man's excellence is not measured by the number of his words; a dog's excellence is not measured by the loudness of its bark."

¹⁰ Observe that a sharp distinction is drawn between *simplicity* and *folly*. The *fool* is severely lashed in this collection of precepts. The Japanese author doubtless had in his mind the celebrated phrase *Gu iro mamore*

err; he is like unto a bird disporting itself among the woods in spring.

Human ears are listening at the wall;¹¹ speak no calumny, even in secret: human eyes are looking from the heavens; commit no wrong, however hidden.

A chariot, with its linch-pin three inches long, will accomplish a journey of a thousand miles: man, with his tongue three inches long, may ruin his body that is five feet in height.¹²

It is the mouth that is the gate of misfortune, it is the tongue that is the root of misfortune: if the mouth were made like unto the nose, a man would have no trouble till his life's end.¹³

When a hasty word hath once been spoken, a team of four horses may pursue, but cannot bring it back:¹⁴ the flaw in a mace of white jade may be ground away, but the flaw of an evil word cannot be ground away.¹⁵

("Keep thy simplicity"), an abridged version of a maxim of Confucius preserved in the "Family Sayings" (Book II, Chap. IX, ¶ IV).

¹¹ "Walls have ears, and stones tell tales" is a common Japanese proverb; and in the Chinese "Book of Poetry" (詩經), which was already old in Confucius' time (6th century B.C.), we find these lines.

"Our sovereign should not lightly utter his words,

Lest an ear be laid close to the wall."—(Part II, Book V, Ode III.)

¹² The power wielded by the tongue is alluded to in similar terms by several Chinese writers.

¹³ The words "The mouth is the gate of misfortune" are a quotation from Confucius ("Family Sayings," Book III, Chap. XI, I). The rest of the paragraph is said to be taken from Giyau-Gi Bo-Satsu (行基菩薩), a celebrated Japanese saint of the eighth century, and the first Japanese Buddhist archbishop. [For the legendary account of his life see the already quoted 元亨釋書, Vol. XIV, pp. 2-5.] Giyau-Gi's original words, as given by the commentator, are remarkable. He says: "The tiger of the mouth ruins the body; the sword of the tongue destroys the life. If the mouth were made, etc." The meaning of this latter expression is that if the mouth were like the nose, it would not be able to speak, and would therefore cease to be the gate of misfortune.

¹⁴ Four horses cannot overtake the tongue." ("Confucian Analects," Book XII, Chap. VIII.)

¹⁵ In the Chinese "Book of Poetry" (Part III, Ode II) are the lines.

"A flaw in a mace of white jade
May be ground away;
But for a flaw in speech
Nothing can be done."

Calamity and prosperity have no gate; they are there only whither men invite them:¹⁶ from the evils sent by Heaven there is deliverance; from the evils we cause ourselves there is no escape.

In the house where virtue is accumulated there will surely be a superabundance of joy: again, in the place where vice is delighted in there will surely be a superabundance of misfortunes.¹⁷

If a man be good in secret, he shall surely be rewarded openly: if a man do good in secret, his name shall surely shine forth openly.¹⁸

Before the gate of him that is strong and steadfast in believing, the clouds of adversity shall not rise up: for the house of him that is strong and valiant in prayer, the moon of blessing shall increase her lustre.

Hearts, like faces, are not alike, but are as water that followeth the shape of the vessel which containeth it:¹⁹ thou canst not bend another's bow, thou canst not ride another's horse.²⁰

¹⁶ I.e., they are not arbitrary dispensations of providence, but simply the result of a man's own actions. The Buddhist doctrine of retribution in this world for sins committed in former existences provides a ready explanation of apparent exceptions to this dictum. The words in the text are said by the commentator to be taken from the "Tso Chuan" (左傳); but a search through that work to verify the assertion has failed to produce them. The Japanese are so fond of appealing to the authority of the "Sa-Den" (as they call it) that perhaps they may sometimes father on its author texts for which he is not responsible. The second clause of the paragraph is taken with a few verbal alterations from the Chinese "Book of Historical Documents" (書經), Part IV, Book V, Part II, ¶ II.

¹⁷ This paragraph is taken almost word for word from the "Book of Changes" (易經). In China the phrase has passed into a proverb.

¹⁸ This paragraph is said by the commentator to be a quotation from an ancient Chinese work on the duty of man by Huai Nan Tzu (淮南子).

¹⁹ The first few words of this paragraph are taken from the "Tso Chuan" (襄公三十一年冬十二月), where the text runs thus: "Men's hearts, like their faces, are not alike. How should I dare to wish thine like mine?" The compiler of these maxims has spoilt the quotation by introducing the irrelevant comparison of the water in the vessel, which seems to say, in this context, that the difference in men's hearts depends on the difference of their faces. He has borrowed, but misapplied, a proverbial expression whose origin is traced to a contemporary of the philosopher Mencius. See Kahibara's "Kotowaza-Gusa," Vol. VI, p. 40.)

²⁰ Said to be a quotation from the Mu-Mon-Kuwan (無門關), a Buddhist work of the Zen sect.

To see the chariot that is in front overturned, is a warning to the chariot that is behind :²¹ not to forget what went before, is a lesson for what followeth after.

When virtue standeth erect, fame is handed down : when love is carried to excess, calamities are many.²²

When a man dieth, he leaveth his name : when a tiger dieth, it leaveth its skin.²³

The wise king ruling a country must not scorn the widowers and the widows :²⁴ if a prince do not praise men, then will the people murmur.²⁵

When thou crossest a frontier, enquire what is forbidden within it : when thou enterest a country, enquire concerning that country.²⁶

When thou enterest a village, conform to that village : when thou meetest with a custom, conform to that custom.

When thou enterest an house, enquire after the private name,²⁷ so

²¹ An ancient Chinese saying.

²² The commentary has more than a page of closely printed matter to explain and illustrate this clause. The meaning simply is that favouritism on the part of a monarch works havoc in his kingdom. The word "love" has here no necessary reference to love between the sexes, but signifies rather "favour."

²³ The Japanese commentator does not seem to have had any personal acquaintance with tigers; for he quotes with confidence a Chinese statement to the effect that this animal, "the prince of wild beasts," is as large as a cow, and that its whelps are called leopards.

²⁴ Adapted from the "Classic of Filial Piety," where it is said: "He that ruleth a country dareth not scorn the widowers and the widows,—much less the people at large." Widows and aged widowers are considered the most helpless and least important of the population.

²⁵ The ancient Oriental theory of government was that to reward virtue publicly was as essential as to punish crime. Even at the present day in Japan rewards of money are given by the Government to persons eminent for their filial piety or faithfulness to their husbands.

²⁶ This paragraph and the two that follow are taken with few verbal alterations from the "Record of Rites" ("Rules of Demeanour" Div. I, Part I, Chap. V, ¶ LXXIX). The phrase, "When thou enterest a village, conform to that village (in Japanese "*Gau ni irite wa, gau ni shitagae*") has become a proverb answering to our English saying, "When in Rome, do as Rome does."

²⁷ ~~22~~ (Chin. *hui*, Jap. *imi-na*), lit., "to shun," to deny." The characters composing a man's private (personal) name should not be lightly

that thou mayest entreat the owner with reverence: but a man's private name vanisheth in the presence of his lord, for there cannot be two honourable designations.²⁸

The fool taketh no thought about what is distant, but he shall find sorrow near at hand:²⁹ he is as one that should scan the heavens through a tube, he is like unto one that should dig the earth with a needle.³⁰

The Gods³¹ punish fools, not to slay, but to chasten them: the master smiteth his disciple, not from hatred, but to make him better.³²

No man is worthy of honour from his birth;³³ 'tis the garnering up

uttered in his presence, and discreet enquiry should therefore be made after them beforehand, in order to avoid giving offence. The emperor's personal name is considered so sacred that the characters composing it are altered or disused during the time of the dynasty which he belongs.

²⁸ Notwithstanding what has been said in the preceding note, a man's private name need not be avoided when it loses its importance by comparison with that of his lord, which is of course much more sacred. For Confucius has said (in the "Family Sayings," Book III, Chap. VII, ¶ XVI): "There are not two suns in the heavens, nor two rulers in one country, nor two honorable designations in one house."

²⁹ In this paragraph, which is almost literally borrowed from Confucius (see "Confucian Analects," Book XV, Chap. II), the translator has not dared to depart from Dr. Legge's version, which brings out the antithesis perfectly. But to a modern Japanese reader, at least, the characters (遠慮) suggest the idea of "tact," "deference," "civility," so that a man without (遠慮) is a tactless, familiar, intrusive man rather than one who, in the literal sense of the words "takes no thought about what is distant."

³⁰ This clause is taken almost literally from the Chinese philosopher Chuang Tzu (莊子) [外篇刻意第十五].

³¹ Interpreted by the commentator with special reference to the Sun-Goddess Amaterasu, though without sufficient reason for such limitation, The characters used are 神明.

³² This doctrine of the necessity of corporal punishment is supported in the commentary by reference to the examples of no lesser personages than Confucius and Sakya Muni themselves. For the former see "Confucian Analects," Book XIV, Chap. XLVI.

³³ In the "Record of Rites" ("The Sacrifice of the Heifer," Chap. XI, ¶ XXI) it is said: "The Emperor's eldest son is but a subject; no man is

of learning that bringeth him wisdom and virtue: the man that is worthy of honour is not surely rich; the rich man may not be worthy of honour.

He whose heart hath many desires, though he be rich must be called poor: he whose heart's only desire is contentment, though he be poor must be called rich.⁵⁴

A teacher that instructeth not his disciple must be called a breaker of the commandments: a teacher that chideth his disciple must be called an observer of the commandments.⁵⁵

If a teacher keepeth a wicked disciple, both teacher and disciple shall go down into Hell: if a teacher nourisheth a good disciple, both teacher and disciple shall attain to the state of an Arhat.⁵⁶

A disciple that will not obey instruction should be swiftly sent back to his father and mother: an uncouth lad, whom thou attemptest to soften, will become an enemy, and increase thy calamities.

He that perpetually followeth evil men is like unto a dog running round the post to which it is tied:⁵⁷ he that is always in the fellowship of good men is like unto a great ship floating upon the sea.

He that imitateth good companions is like unto the mugwort which, growing among the hemp, is straight: he that is familiar with evil companions is like unto the bramble that, growing in the thicket, is crooked.⁵⁸

made honourable by his birth." Confucius confirms and enlarges on this text in the "Family Sayings," Book VIII, Chap. XXXIII, ¶ I. It required courage to transfer this democratic Chinese teaching to Japan.

⁵⁴ The "*desire for contentment*" seems a somewhat contradictory phrase. The author meant to talk of the *feeling* of contentment, or simply contentment; and his words are explained in the commentary.

⁵⁵ I.e., the Buddhist commandments, whose number is variously estimated at five, ten and five hundred.

⁵⁶ An Arhat or Arhān is a perfected saint. For details see Eitel's "Handbook for the Student of Chinese Buddhism," s.v.

⁵⁷ This simile is said by the commentator to be taken from a Buddhist Sūtra entitled "*Butsu Hon-Giyau-Shifu Kiyau*" (佛本行集經).

⁵⁸ No moral system attributes more importance to the force of example than that of the Chinese sages partly followed by our author. "The mugwort growing among the hemp" has become a proverbial expression: it is said by the commentator to have originated with the philosopher Tseng Tzu (曾子), but the translator has not been able to verify this statement. The

Leaving thy kindred and cleaving unto a strange teacher, learn to practise the commandments, to be tranquil, to be kind: and though thou be slow of wit, thou mayest, if thou wilt, reach the seat of intelligence.³⁹

If thou learn but one character each day, 'twill be three hundred and sixty characters [in the year]: each character is worth a thousand pieces of gold, each dot may be the saving of many lives.⁴⁰

He that has taught thee for one day must not be lightly treated; how much more he that hath taught thee for many years: thou art sworn to thy teacher for three lives; thou art bound to thy parents for one life.⁴¹

saying is, however, found in the work of the philosopher Hsün Tzu (勸學篇第一, p. 3). The comparison of the bramble seems less happy, as that plant is naturally crooked and twisted, without being made so by its surroundings. To illustrate this paragraph, the commentator aptly quotes Confucius' maxim: "Have no friends not equal to thyself."—("Confucian Analects," Book I, Chap. VIII.)

³⁹ The teaching of this paragraph is, of course, completely Buddhist; for in the eyes of Chinese philosophy it is not conceivable that any other duty should be capable of overriding that which binds a man to his kindred, and more especially to his parents. The characters 愚 and 鈍 ("fool" and "simple"), which elsewhere in the course of this treatise are used to express very different and almost antagonistic ideas, are here combined to form the expression which has been translated by the word "show." The characters translated as "seat of intelligence" (a well-known Buddhist phrase answering to the Sanskrit "Bôdhi") are erroneously given in the text as 學位 instead of 覺位.

⁴⁰ The commentator quotes a couple of not particularly relevant Chinese stories to illustrate the saying that "each character is worth a thousand pieces of gold." The last words of the paragraph are Buddhist, being said to be taken from the "Saddharma Pundarika Sutra (法華經) or "Lotus of the Wonderful Law," and must be interpreted to mean that the merit obtained by one who copies so much as a single dot in a character of the Buddhist Scriptures will be so great as to save him from hell, and cause him to be born as a human being during several lives.

⁴¹ The teaching of this paragraph again is completely Buddhist, and the commentator makes fruitless efforts to bring it into harmony with the dicta of the Chinese sages. From the Buddhist point of view, the one life during a portion of which a child owes everything to its parents is but little in comparison to the three lives (past, present and to come), over which his religious teacher's instruction has such mighty influence.

A disciple must walk seven feet behind his teacher : and not tread on his shadow.⁴²

Kuwan-On, for that he was his teacher, weareth Mida in his precious crown : Sei-Shi, for the sake of filial piety, weareth on his head his father's and his mother's bones. [In a precious jar are the white bones deposited.]⁴³

Rise early in the morning, and wash thine hands ; collect thy mind, and recite the scrolls of the scriptures : lay thee down late at night, and bathe thy feet ; compose thy spirit, and meditate on the meaning.⁴⁴

He that learneth, but not with his whole mind, is like unto a

⁴² The commentator, in illustration of this paragraph, makes the foolish remark that, by remaining at a distance of seven feet behind his teacher, he will avoid treading on the latter's shadow, forgets to quote the apposite words of the "Record of Rites" ("Royal Commands" Part V, Chap. V, ¶ XVIII) : "Walk to the rear of thy father's contemporary, and slantingly behind thine elder brothers. Friends must not get before each other." Of K'as Ch'ai, a favourite disciple of Confucius, it is related in the "Family Saying" (Book III, Chap. XII, ¶ I) that he never trod on his master's shadow.

⁴³ Mida (彌陀) stands for the Sanskrit Amitabha, Kuwan-On (觀音) and Sei-Shi (勢至) for his two followers Avalokitesvara and Mahastana-prapta. In Japan Kuwan-On is constantly represented as a female ; but as it is not possible that the author of this treatise should have made such a mistake as so to have conceived of him, the masculine pronoun has been used in the translation. The text naturally (owing to the want of genders and of pronouns in the Japanese language) contains no indication of the sex intended by the writer. The images of Kuwan-On in this country commonly have on their head a small figure of Amitabha. The words placed between brackets seem to be the addition of some unintelligent scribe.

⁴⁴ The first few words of this paragraph are a condensed quotation from the "Record of Rites" ("Household Precepts," Part XII, Chap. I, ¶ I). The commentator says that the characters 書經, here translated "scriptures," must be taken to mean the Buddhist scriptures if the reader is a priest, and the Chinese classics if he is a layman. But it is undoubtedly the Buddhist scriptures which the author had in view. The translator is not aware of its ever having been the custom in this country to bathe the feet before retiring for the night. Probably the phrase is only used rhetorically, in order to balance the first clause of the paragraph.

drunken man mumbling in his sleep: he that readeth a thousand scrolls, but readeth them once only, is like unto a moneyless man hurrying to the market.

In thin raiment on a winter's night, brave the cold and be reading the whole night through: with scanty fare on a summer's day, repel hunger and be learning the whole day long.

Drunkenness maketh the heart mad,⁴⁵ satiety maketh a man weary of study: warmth increaseth drowsiness,⁴⁶ comfort causeth sloth.

K'uang 'Hêng,⁴⁷ for the sake of studying a night, made a hole in the wall to admit the moonbeams: Sun Ching,⁴⁸ for the sake of studying, closed his door to hinder folks from coming in.

⁴⁵ Excess in food and drink is severely condemned by the Buddhist teaching. The commentator quotes different religious works which variously compute at ten, thirty-five, and thirty-six the offences of which wine is the cause, one of them being that mentioned in the text. Of Confucius it is said ("Confucian Analects," Book X, Chap. VIII) that "it was only in wine that he laid down no limit to himself, but he did not allow himself to be confused by it"—words which are quoted by the commentator in support of the doctrine of this paragraph, though the Western reader will hardly think them sufficiently strong to help to form a bulwark for the doctrine of total abstinence.

⁴⁶ Both Confucius and Buddha severely reprimanded laziness and unnecessary sleep, it being told of the former that he likened to "rotten wood" a disciple who slept during the day-time, while the latter, on a similar occasion, is said to have used the derisive comparison of a clam. Sleep, says the commentator's Buddhist authorities, is the cause of twelve (according to others, twenty) offences.

⁴⁷ 匡衡 (Jap. spelling Kiyau-Kan). The commentator pieces together a short biography of this worthy from various Chinese historical works. The exact period of his life is not given, but he flourished in the 1st century B.C. under the "Former Han" dynasty, and was at first but a simple peasant. His studious habits attracted the attention of his employer, to whose service he had been drawn by the knowledge that the latter possessed a well-furnished library, and by its help and that of its owner he rose to be a scholar of celebrity. The "moon-beams" are, it is said, not mentioned in the original authorities; but it is averred that K'uang 'Hêng at one time made a hole in the wall in order to obtain the benefit of his neighbour's candle for the purpose of reading at night. The commentator supposes that the "moonbeams" are a poetic license, made use of by our author for the sake of embellishing his sentence.

⁴⁸ 孫敬 (Jap. Son-Kiyau). A native of the kingdom of Ch'ü, who flour-

Su Ch'in,⁴⁹ for the sake of studying stuck an awl against his thigh that he might not sleep: Chün Ching [properly Sun Ching], for the sake of studying, tied a rope round his neck that he might not sleep.

Ch'é Yin⁵⁰ so dearly loved studying at night, that he collected fire-flies to serve him as a candle: Hsüan Shih so dearly loved studying at night, that he piled up snow to serve him as a light.

Hsiu Mu's⁵¹ mind was so much engrossed in his book, that he

ished in the 3rd century B.C., and made himself famous as a student by the habit mentioned in the text, which gained for him the nickname of "Doctor Close-Door" (閉戶先生). See also next Note.

"蘇秦 (Jap. So-Shin). The intense studiousness of this worthy and the next are commemorated by the author of the "Trimetrical Classic" (三字先經) in the lines:

自 彼 錐 頭
勤 不 刺 懸
苦 教 股 梁

of which the words in the text are an adaptation. Su Ch'in flourished during the epoch of the "Warring States" (戰國), and died B. C. 318. Chün Ching must be the same individual as the one mentioned in the last paragraph as Sun Ching. The Japanese text has here the characters 倭敏 instead of 孫敏; but, as there is no such surname as 倭, and as, moreover, the story (which in China has become a household word) of his tying the rope round his neck to wake him by throttling him whenever he nodded over his book is always told of Sun Ching, the Japanese author's memory must have played him false on this occasion.

"車胤 (Jap. Shiya-In). This worthy and the next (宣士, Jap. Sen-Shi) are commemorated in the following lines of the "Trimetrical Classic:"

學 家 如 如
不 雖 映 囊
輟 貧 雪 螢

Ch'é Yin was a native of the kingdom of Chin (晉) and flourished two or three centuries after the Christian era. "Hsüan Shih" must be a clerical error for Sun K'ang (孫康), of whom the story of the snow is told, and who was a contemporary of Ch'é Yin's. It was of course on account of their poverty, which did not allow of their purchasing candles, that these two celebrated students resorted to such unusual means of obtaining light.

"休復 (Jap. Kiu-Boku) is said by the commentator, who quotes a Chinese biographical work entitled 文士傳, to have been a native of 'Ho-yang Hsien (河陽縣). It is told of him that he was never seen without a book even when walking in the street, and that he was always so deeply engrossed

perceived not that his hat had fallen off: Kao Fêng's⁵³ mind was so much engrossed in his book that he perceived not that the wheat was being washed away.

Liu Shih,⁵⁴ while weaving raiment, ceaselessly recited the Scriptures: I K'uan,⁵⁴ while ploughing the fields, ever carried a book in his belt.

All these men, loving study day and night: filled the Empire with their writings, and at last attained to solid learning.

Even though thou be playing with the dice and tube,⁵⁵ let thy

in his reading, that when one day a sudden gust of wind blew his hat off, he did not notice the circumstance. Probably here, as in several other passages in this little treatise, there is a mistake in the name of the personage mentioned, as there does not seem to be in China any such surname as 休.

"高鳳 (Jap. Kau-Hou). He is said by the commentator, who quotes two Chinese works entitled respectively 後漢書 and 魏藏書, to have been a native of Nan Yang Yeh (南陽葉). Though but a peasant by birth, he was always so completely wrapped up in his book, that when one day his wife, who was going out on some other business, set him to watch some wheat which was drying in the sun, he never heeded a violent shower which came down and washed it all away. However, Kau Fêng was not a loser in the end; "for" [concludes the commentator] "such extraordinary devotion to learning gained for him the reputation of a distinguished scholar."

"劉寔 (Jap. Riu-Shiyoku) is said by the commentator, who quotes a Chinese encyclopædia entitled 廣輿記, to have been a native of Kao T'ang (高唐) in the Kingdom of Chin (晉).

"倪寬 (Jap. Gei-Kuwan); but the authorities, the 漢書列傳, (季氏藏書 and 齊其名臣傳), whom the commentator quotes, all give, says he, the first character as 兒 (Chin. Erh, Jap. ji). This personage is said to have been a native of Ch'ien Ch'êng (千乘), and to have been in the service of a celebrated scholar named K'ung An Kuo (孔安國).

"The commentator is probably right in saying that the author means to speak of checkers (*go*) or backgammon (*sugoroku*),—games which are not (like some others) condemned as gambling games, but considered to be innocent amusements. The teaching of the entire paragraph, therefore, amounts to this: Even when unbending thy mind or following thy trade, never be completely without any thought of study. We may also, from a Buddhist point of view, suppose that the habit of incessantly perusing the sacred books might perhaps obtain for him who practised it an amount of merit sufficient to counterbalance the wickedness of pursuing such a calling as that of the manufacture of weapons intended to take life,—that direct of all offences.

mouth be ever reciting the Scriptures: again, though thou be planing a bow and feathering the arrows, always carry some writing at thy side.

Chang I's⁵⁵ recitations from the moderns and the ancients made withered trees to bear fruit: Kuei Mao's recitations of the historical records made old bones to put on flesh.

Po Ying⁵⁷ already in his ninth year attained to the rank of a teacher: Tsung Shih at seventy first loved study, and rose to be the Imperial Preceptor.

The wise man, however mean his birth, shall ascend into lofty halls: the fool, however exalted his rank, shall fall to the nethermost part of Nairi.⁵⁸

Though the sins committed by the wise man be great, he shall not fall into hell: though the sins committed by the fool be small, he shall surely fall into hell.⁵⁹

⁵⁵張儀, apparently a clerical error for 張儀 (Jap. Chiyau-gi). He was, as the Japanese commentator remarks, a native of the state of Wei, and he flourished in the fourth century B.C. But the translator has not been able to find elsewhere any confirmation of the miracle here said to have been performed. The same remark applies to Kuei Mao (龜毛, Jap. Ki-Bau), whose very name must be erroneously given, as there is no such surname as 龜 in China. The commentator admits that no such person ever existed, and suggests that the name may have arisen from the misconception of an expression in an ancient text.

⁵⁷伯英 (Jap. Haku-Yei). The translator has not been able to verify what is here said about this worthy and the next 宗夷 (Jap. Sou-Shi). It is strange that the author should not rather have quoted the familiar examples of precocious and tardy proficiency in learning given by Tsu Ying (祖榮) and Liang Hao (梁顥), and commemorated in the "Trimetrical Classic."

⁵⁸ This paragraph is interpreted by the commentator in a purely Buddhist sense. The "wise man" is he who keeps the commandments, the "fool" is the evil-doer, and the "lofty halls" are the heaven of Brahma. Nairi (奈利) would seem to represent the Sanskrit Naraka, a general term for the various parts and subdivisions of hell. (See Eitel s.v.)

⁵⁹ This paragraph is said by the commentator to be a *résumé* of a long passage in the celebrated "Mahāpragna Paramitā Sūtra" (大般若經), and is explained by the gloss that the wise and righteous man will repent of whatever sins he may commit, and thus render himself worthy of escaping punishment, whereas with the fool the contrary will be the case.

The fool ever claspeth unhappiness, and may be likened unto a prisoner in gaol: the wise man is ever rejoicing, and he again is like unto the Heaven of Radiant Sounds.⁸⁰

A father's loving-kindness is higher than the mountains, and Mount Shiyumi⁸¹ is low in comparison: a mother's bounty is deeper than the sea, and the Sea of Sau-Miyau⁸² is shallower far.

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For ten moons a child is in the womb, and the mother constantly suffereth in body and in spirit: for many years after being born, it is nourished and cared for by father and mother.

In the day-time it sitteth on the knees of its father, who stroketh its head during many years: at night it lieth in the embrace of its mother, who bestoweth upon it many measures of milk.⁸⁴

At morn a man hieth him to the mountains and wilds to kill beasts wherewith to feed his wife and children: at eve he goeth down to the streams and seas to catch fish wherewith to support his life.

⁸⁰ This paragraph causes some difficulty to the commentator, who quotes from a Sutra entitled 正法念經 a stanza of diametrically opposite import, the position of the words "wise man" and "fool" being reversed. The sentiment in the text seems more natural and instructive, but the thought is less gracefully conveyed than in a paragraph of the "Teaching of the Words of Truth," where it is said:

He that loveth iniquity beckoneth to misfortune: it is, as it were, the echo answering to the voice.

He that practiseth righteousness receiveth a blessing: it is just like the shadow following after the man.

⁸¹ 須彌山 (Shiyu-Mi-Sen), the Sanskrit Sumēru, a mountain of fabulous height forming the axis of every universe, and composed of gold, silver, and other precious substances. For details, see Eitel s. v.

⁸² 滄溟海 (Sanskrit ?). The commentator quotes a statement from a work entitled "Ka-Gaku Shifu" (下學集 to the effect that this sea "is exterior to the eight oceans, and has a depth of ninety thousand yōdjanas."

⁸⁴ The Paragraph of the original text omitted in the translation is as follows:

白骨者父淫。赤肉者母淫。
赤白二諦和。成五體身分。
(淫 for 淫) (諦 for 滯)

⁸⁴ The commentator says that the quantity of milk taken by a child to its third year inclusive is estimated in one of the Buddhist Scriptures at about 280 measures. The character here vaguely rendered as "measures" is

To support his life early and late, he doth evil deeds day and night: to please their palate morning and evening, he falleth into hell for many eons.⁶⁵

He that receiveth benefits and is not grateful, is like unto the birds that despoil the branches of the trees they perch on: he that is the object of favours and is not grateful, is like unto the deer that ravage the grass of the fields they dwell in.

When Yu Mêng⁶⁶ struck his father, lightning from heaven rent him asunder: when Pan Fu⁶⁷ reviled her mother, a wondrous serpent bit her to death.

Kuo Chü,⁶⁸ to support his mother, dug an hole and found a cauldron

斛 (Chin. 'hu, Jap koku), the precise degree of capacity designated by which has varied greatly at different times and still varies in different parts of China. See Williams' "Syllabic Dictionary," p. 233.

⁶⁵ The character 却, here translated as "eon," is that employed technically by the Chinese Buddhists in the signification of the Hindoo *kalpa*, an eon of millions of years (see Eitel s. v.). Taking life,—any life,—is with the Buddhists the greatest of crimes.

⁶⁶ 西夢 (Jap. Iu-Mu). The commentator says that the story of this unfilial son is to be found in a Chinese work by 岑象求 entitled 吉凶影響錄. It seems that he only struck his father on being provoked by a blow from the latter. But even such provocation was no excuse in the sight of Heaven; and on his back, after he had been killed by the thunderbolt, were found burnt in the words: "Yu Mêng having struck his father, Heaven rendeth him asunder."

⁶⁷ 潘婦 (Jap. Han-Fu). The commentator says that the story of Pan Fu is to be found in a Chinese work by 張帥正 entitled 摺異記.

⁶⁸ 郭巨 (Jap. Kuwaku-Kiyo). This paragraph and the four following give in a very succinct form ten instances of filial piety mostly selected from the celebrated Chinese "Four-and-Twenty Examples of Filial Piety." It may be as well here to transcribe the fuller account of Kuo Chü given in Mayers' "Manual," (Articles 303), only altering the spelling of the proper names so as to make them accord with Sir Thomas Wade's system of transliteration, which the translator aims at consistently following. Mayers says. "Kuo Chü . . . , one of the patterns of filial piety, is said to have lived in the second century A.D., and to have had an aged mother to support, beside his own wife and children. Finding that he had not food sufficient for all, he proposed to his wife that they should bury their infant child in order to have the more for their mother's wants; and this devotedness was rewarded by his discover-

of gold: Chiang Shih,⁶⁹ having divorced his wife, drew water and found a spring in his court-yard.

Mêng Tsung,⁷⁰ weeping among the bamboos, picked sprouts from beneath the deep snow: Wang Hsiang⁷¹ weeping struck the ice, and fishes leapt to the hard surface.

Shun⁷² the son supported his blind father, and in answer to his

ing, while engaged in digging a pit for this purpose, a bar of solid gold which placed him above the reach of poverty, and upon which were inscribed the words: 'A gift from Heaven to Kuo Chü; let none deprive him of it!'

⁶⁹ 姜詩 (Jap. Kiyau-Shi). "One of the patterns of filial piety, said to have flourished *temp.* Han dynasty. In conjunction with his wife he devoted himself to waiting on his aged mother, in order to gratify whose fancy he went daily a long distance to draw drinking water from a river and to obtain fish for her table. This devotedness was rewarded by a miracle. A spring burst forth close by his dwelling, and a pair of carp were daily produced from it to supply his mother's wants."—(Mayers' "Manual," Articles 256.)

⁷⁰ 孟宗 (Jap. Mou-Sou). "An official of the Chin dynasty, 3rd century A.D., who is enrolled among the examples of filial piety. It is related of him that on one occasion, during winter, on his mother expressing a longing wish for some bamboo shoots, he went into the woods bewailing the misfortune that the delicacy could not be obtained at such a season: when suddenly, as a reward for his filial regard, the bamboos around him began to put forth their sprouts." (Mayers' "Manual," Articles 400.)

⁷¹ 王祥 (Jap. Wau-Shiyau). "A public official under the first sovereign of the Chin dynasty, A.D. 265. His fame rests chiefly upon an incident which illustrates his devotion to filial duty, and which has given him a place among the recognized examples of this virtue. His stepmother expressing a wish one day during winter to obtain some fresh fish, although all the rivers were frozen, he lay down upon the surface of a sheet of ice until the warmth of his body caused it to melt, by which means he was enabled to take a pair of carp and to present them to his stepmother."—(Mayers' "Manual," Article 816.)

⁷² 舜 (Jap. Shiyun). "B.C. 2317-2208. The successor chosen to occupy his throne by the ancient Emperor Yao, and revered with the latter as one of the patterns of regal virtue. . . . His father, Ku Son (lit. the 'blind old man'), on the death of Shun's mother, took a second wife, by whom he had a son named Hsiang (象); and preferring the offspring of his second union to his eldest son, he repeatedly sought to put the latter to death. Shun, however, while escaping this fate, in no wise lessened his dutiful conduct toward his father and stepmother or his fraternal regard for Hsiang. He occupied himself in ploughing at Li Shan (歷山), where his filial piety was rewarded

tears his father's eyes were opened: Hsing Ch'ü⁷³ supported his aged mother, and, as he chewed the food for her, she was restored to youth.

Tung Yung⁷⁴ sold his body, making it an honourable instrument of filial piety: Yang Wei⁷⁵ thought of his lonely mother, and when he wept before the tiger, he was left unharmed.

by beasts and birds who spontaneously came to drag his plough and to weed his fields. He fished in the Lei Lake (澤雷), and made pottery on the banks of the Yellow River. Still his parents and his brother sought to compass his death; but although they endeavoured to make him perish by setting fire to his house and by causing him to descend a deep well, he was always miraculously preserved. In his 20th year he attracted by his filial piety the notice of the wise and virtuous Yao, who bestowed upon him later his two daughters in marriage, and disinherited his son, in order to make Shun his successor upon the throne."—(Mayers' "Manual," Article 617.)

⁷³ 刑栗 (Jap. Kei-Kiyo). This is not one of the orthodox "Four-and-Twenty Examples of Filial Piety," and indeed there is no such surname in China as 刑. Moreover, the whole clause in the original is obscure and even ungrammatical. The meaning, however, is that given in the translation. The commentator quotes a work by 樂史 entitled 孝悌錄 in support of the story, and says, among other things, that by thus chewing his mother's food for her before putting it into her mouth he caused her, when past seventy, to retain the looks of a woman of thirty.

⁷⁴ 董永 (Jap. Tou-Yei). "One of the patterns of filial piety, who is said to have flourished *circa* A.D. 200. On the death of his father, having no means of fulfilling the due funereal rites, he borrowed 10,000 *cash* on the security of his own person as a bond-servant, and proceeded to accomplish the interment of his parent. When returning to his home, he met a woman who offered herself as his wife, and who repaid the loan he had incurred with 300 webs of cloth. The pair lived happily together for a month, when the woman disclosed the fact that she was no other than the star *Chih Nii*....., who had been sent down by the Lord of Heaven her father to recompense an act of filial piety; and saying this she vanished from his sight."—(Mayers' "Manual," Article 691.)

⁷⁵ 楊威 (Jap. Yau-Wi). The commentator, quoting a work by 李觀 entitled 忠孝圖贊, supports the text by saying that it was on the ground of his being his aged mother's sole support that he begged of, and obtained from, the tiger the permission to live. The story, however, may be but a slightly differing version of that of Yang Hsiang (楊香), succinctly told by Mayers as follows ("Manual" Article 882): "When fourteen years old he saw his father pounced upon by a tiger, whereupon he threw himself under the talons of the beast and thus enabled his father to escape with the sacrifice of his own life."

When Yen Wu⁷⁶ was covering the grave with earth, crows came and carried earth to fill it in: when Hsü Tzū⁷⁷ had dug the grave himself, he planted pines and cypresses to form the grave.

All these men tended their fathers and mothers with filial piety: and the Gods⁷⁸ were merciful unto them, and fulfilled all their desires.

Life, with birth and death, is not enduring, and ye should hasten to yearn after Nirvāna:⁷⁹ the body, with its passions, is not pure, and ye should swiftly search after intelligence.⁸⁰

Of all loathsome things the most loathsome is the Desert,⁸¹ wherein

⁷⁶ 鵲鳥 (Jap. Gan-U). In support of the incident mentioned in the text, the commentator quotes the 廣輿記, but he gives no dates. The presence of the character 鳥 ("crow") both in the name of the hero of the story and in that of the graveyard tends to make it appear still more mythical. Very likely the tale was invented to account for the name of the place.

⁷⁷ 許孜 (Jap. Kiyō-Shi). The commentator, who quotes a variety of Chinese authorities, states that this personage was a native of Tung Yang (東陽) in the Kingdom of Chin. (晉). He also renders the text intelligible by a gloss to the effect that the trees which Hsü Tzu had planted round the last resting-place of his parents having been destroyed by some deer who came to browse on their branches, these deer were devoured by wild beasts, upon which the trees were able to grow again, and the graves were no longer desecrated.

⁷⁸ The text has the characters 佛神, which may most conveniently be rendered by the comprehensive term "Gods," if the reader will bear in mind that the upper powers of both the Buddhist and Sin-tau religions are intended.

⁷⁹ The obscure Japanese commentator on this little treatise is (it need hardly be said) no authority on so much disputed a point as the proper signification of the term Nirvāna. Still the conciseness of his definition may make it worth quoting. He says: "Nehan to ha shidzuka naru satori ni itaru nari" ("Nirvāna means attaining to tranquil insight").

⁸⁰ 菩提, the Sanskrit Bodhi. The term is defined as "the act of keeping one's mind truly awake."—(See Eitel s. v.)

⁸¹ I.e., in Buddhist parlance, this world. Other depreciatory names for it are "the fiery abode," "the polluted ground," etc., which may remind the European reader of such expressions as "the vale of tears," "a weary pilgrimage," and others with which he is familiar.

The pain of parting mentioned in the text is one of the "Eight Pains" (八苦, the Sanskrit Ashta Duḥkha) of the Buddhist theology, the other seven being: Birth, Old Age, Sickness, Death, Disappointment, Persecution and Decrepitude.

all who meet must endure the pain of parting: of all fearful things the most fearful are the Six Paths,⁵³ where all who are born must endure the grief of dissolution.

Long life is like unto the May-fly,—born in the morning and dying at eve: our bodies are like unto the plantain leaf,—flapping in the breeze and easily torn to pieces.

Damask and gauze, brocade and embroidery are no provision for the Dark Road:⁵⁴ gold and jewels are treasures for this world alone.

Prosperity and glory never help man along the Buddhist path: rank and favour bring renown but in the present world.

Though ye give the pledge of the tortoise and of the crane, 'tis but for the moment before your lives shall vanish like the dew:⁵⁵ though

⁵³六道, the Sanskrit Gati, "the 6 paths of transmigration or 6 conditions of sentient existence, viz. devas, men, Asuras, beings in hell, Prêtas and animals."—(Eitel s. v.) The meaning of the entire paragraph is that existence is the worst of all evils,—a commonplace of Buddhist theology.

⁵⁴冥途, the Sanskrit Naraka, "a general name for the various compartments and divisions of hell."—(Eitel s. v.)

⁵⁵The tortoise and the crane are favourite emblems of long life, and many extraordinary statements concerning them are to be found in the Chinese writers. In illustration of this, and also as a specimen of the Japanese commentator's style, the whole of his remarks on the above clause are here transcribed. He says: "Giving the pledge" means 'making a promise.' The reference is to the pledge given and taken by husband and wife, wherein each wishes that both may emulate the longevity of the tortoise and of the crane, and live on for a thousand or a myriad years. It is said in the 'Collection of Important Hints on Hygiene' that the tortoise and crane have hundreds and thousands of lives; and in the 'Map of Happy Omens' it is said that the tortoise lives for three thousand years. In the article on the crane in the General outlines of Botany' [本草綱目, a celebrated ancient Chinese work on *materia medica*] there is the following passage quoted from the 'Crane Classic' [相鶴經]: 'The crane is a bird of the active element [陽]. The male and female pair in their hundred and sixtieth year, but it is only when they are one thousand six hundred years old that they attain their perfect form. They then drink, but do not eat, and are subject to transformations.' Again it is said by Yü Tan: 'The pulse of the tortoise and of the crane is vigorous, whence their longevity and the fact that they do not die. They are calm in their movements.'"
[This quotation is both incorrect and incomplete. But the original Chinese work contains a great number of curious statements illustrative of the superstitious reverence with

ye draw over you the covering of the mandarin drake and duck, 'tis but for the interval before your bodies shall be destroyed.⁸⁵

Even in the pearly palace of the Heaven of Indra,⁸⁶ there is mourning over change and dissolution: even in the lofty halls of the Heaven of Brahmā,⁸⁷ there is grief for fire, blood and sword.

which the crane and the tortoise were regarded.] "The dew mentioned in the next clause is a figure,—the shortness of human life being likened to the fragility of the dew-drops. In Chinese literature we read of 'the dews upon the scallions,' and in Japanese literature we have such phrases as 'short as the moment before drop the dews from the convolvulus.' In the 'Biography of Su Wu,' in the 'Chronicles of Han' it is said: 'Man's life is like the morning dew.' So that all our fond pledges for the hundreds and thousands and myriads of years of the tortoise and of the crane are valid only for the moment before our life shall vanish like the dew-drops."

⁸⁵ Speaking of the mandarin drake and duck, Mayers says ("Manual," Article 969): "These beautiful waterfowl manifest, when paired, a singular degree of attachment to each other, and they have hence been elevated into an emblem of connubial affection and fidelity." It is unfortunate that their somewhat ludicrous English name should spoil what in Chinese or Japanese is a very graceful allusion.

⁸⁶ 切利摩尼殿, the Sanskrit Traiyastimsas (see Eitel s. v.). According to the Buddhist theology which, while accepting the Brahminical pantheon, degraded its divinities to a rank inferior to that of the least of the Buddhist saints, these divinities themselves, though living through countless ages, are not immortal. Their approaching end is indicated by five symptoms of decay, which are given by the commentator as follows:

- I.—The fading of their crown of flowers.
- II.—The sudden soiling of their heavenly raiment by the dust.
- III.—Sweat from the armpits.
- IV.—Blinking with the eyes.
- V.—A loss of joy in their abode.

⁸⁷ 大梵高靈閣, the Sanskrit Brahmaloka. The Gods, as noticed in the preceding foot-note, are neither immortal nor exempt from the law of transmigration; and if they sin, they will have, like men, to pass through the "Three Roads" of Hell (Fire), Demoniactal Existence (Sword) and Animal Existence (Blood). Hell is said by the commentator, who quotes an old Buddhist authority, to be called the Road of Fire, because the eyes of those suffering there burn by night. Similarly in Demoniactal Existence, grass-blades are used as swords for cutting the demons in pieces, whence its alternative name, while the name of the Road of Blood is given to Animal Existence because animals bite and draw each other's blood. These Three Roads are states of punishment merited by three classes, of sins, viz., Anger, Cruelty and Stupidity.

Even Sudatta's⁶⁸ ten-fold excellence could not arrest his dissolution: even Asôka's⁶⁹ seven treasures could not purchase length of life.

Even Tukhâra,⁷⁰ with its strength to turn back the moon, was

⁶⁸須達, the original name of Anāthapindika, a contemporary of Buddha's, and a wealthy householder in Srāvastī famous for his liberality. The superior man excels, says the Japanese commentator, quoting an old Buddhist authority: I. in birth; II. in rank; III. in riches; IV. in authority; V. in wisdom; VI. in longevity; VII. in purity of life; VIII. in courtesy; IX. in the favour he finds with those above him; X. in the love with which he is regarded by those beneath him.

⁶⁹ For details of the life of this celebrated prince, the Constantine of the Buddhist Church, see Eitel s. v. and the various European works on Buddhism. The Japanese commentator states that his seven treasures were: I. a golden wheel; II. a white elephant; III. a violet horse; IV. a divine gem; V. a pearly wife; VI. great riches; VII. a great army.

⁷⁰ Jap. Guwatsu-Shi (月支). Said by the commentator to be another name for India, but properly corresponding to the present Badakshan (see Eitel s. v. Tukhâra.). The Japanese author's conciseness has made him obscure in this passage, as it is not of Tukhâra itself as a country, but of certain inhabitants of Tukhâra, that he would speak. The following quotation from the commentary will render the text intelligible:

"The 'Sātra of Religious Verses and Apologues' (法句譬喻經, commonly known in Europe by its Pāli title of Dhammapada) tells us that there were four brothers, Brahmins, each of whom possessed the five supernatural powers. So, it having come to their knowledge that they were one and all of them to die on that day week, they took counsel together, saying: 'Shall it be that we may not avoid death,—we who are in possession of the five supernatural powers,—we who can turn heaven and earth upside down and take the sun and moon in our hands, and move mountains, and make rivers cease to flow, and find nothing impossible to us?' So, that they might escape from the mortal-slaying demon, they asked leave of absence from the King; and one of them plunged into the ocean, one of them went to Mount Sumēru, one of them hid in the air, and the fourth remained in the haunts of men, but—when the appointed week was ended, they died all four, as drops the fruit when it is ripe. On being apprised of the circumstance, the King went to the place where Buddha was, and, having prostrated himself, addressed the Venerable Śākya, saying, 'All these four Brahmins possessed the five supernatural powers. How then might they not avoid death?' To which Buddha graciously made this reply: 'There are four things which a man cannot avoid: Firstly, with parents to procreate him, he cannot avoid birth; secondly, having been born, he cannot avoid old age; thirdly, having grown old, he cannot avoid sickness; fourthly, being sick, he cannot avoid death.'

The messengers of Yāma (Jap. Yen-Ma, 閻 魔 or 閻羅), the Regent of

bound by the messengers of Yāma: even the Dragon-Emperor,⁹¹ with his power to hurl the dragons, was smitten by the staves of the host of hell.

Above all things, men must practise charity: it is by almsgiving that Wisdom is fed: less than all things, men must grudge money; it is by riches that Wisdom is hindered.⁹²

If a man be so poor that he hath no money wherewith to give an alms: he must let a feeling of joy arise within him when he seeth another give.⁹³

The merit of an alms given with a compassionate heart to one

Hell (see Eitel s.v.), are, according to the Japanese commentator, who quotes a Sūtra entitled "*Zhifu Wan Kiyau*" (十王經, i.e. "The Sūtra of the Ten Kings," Sanskrit ?) three in number, and their names are "the Soul-Snatching Demon" (奪魂鬼), "the Spirit-Snatching Demon" (奪精鬼), and "the Demon who Binds the Animal Spirits" (縛魄鬼). [The rendering of 魂精, and 魄 as signifying respectively *Soul*, *Spirits* and *Animal Spirits* is of course subject to correction by any technical theology definitions which may determine the usage of these terms and of their Sanskrit originals by writers belonging to the Buddhist Church.]

⁹¹ Apparently the Sanskrit *Sagara*, "a Nāga (Serpent) king, whose palace, refulgent with pearls, is situated at the bottom of the Ocean N. of the *Mēru*." (Eitel s.v.) The allusion in the text is not clear. The "host of hell" may be either Yāma's messengers mentioned in the first clause of the paragraph, or another species of demons of which the hell entitled in Sanskrit *Avīci* (阿鼻地獄) is full. The commentator states that the mouths of these demons are like those of the *Yakshas*, their teeth like the teeth of dogs and spouting fire, their eyes four in number, and their heads eight in number, while they have no less than sixty-four horns whose tips are all ablaze.

⁹² Remember that "Wisdom" (*Rōdhi*) in the Buddhist theological terminology has a much higher moral signification than that which we ordinarily attach to the term. The Japanese commentator quotes a number of authorities to attest the extreme importance to be attached to almsgiving, or rather to charity in its widest sense (for it includes the gift of religious instruction to the soul as well as lower donations of food and money to support the body). Charity is reckoned as the first and greatest of the Six Cardinal Virtues.—(See Eitel s. v. *Pāramitā*. Also Spence Hardy's "Eastern Monarchism," pp. 80 et. seq.)

⁹³ This paragraph is said by the commentator to be a quotation from one of the Buddhist Scriptures. The merit accruing to him who acts in the manner here prescribed will be equal to that obtained by the actual giver of the alms.

poor man is like unto the ocean: the recompense of alms given to a multitude for thine own sake is like unto a grain of poppy-seed.⁸⁴

He that pileth up sand for a pagoda will speedily obtain a golden body: he that plucketh flowers for a Buddha will soon be resting upon the lotus-seat.⁸⁵

The strength of him that receiveth one line with faith exceedeth the dignity of the Wheel-Turning King: the virtue of him that listeneth to half a verse is better than the treasures of the Three Thousand Worlds.⁸⁶

The first thing needful is to search after the Buddhist Path, the next thing is gratitude for the Four Benefits: ⁸⁷ the last thing is, extending thy care to every one of the Six Paths, to practise the Buddhist Path in concert with them.⁸⁸

⁸⁴ This paragraph, says the commentator, is a quotation from a stanza of poetry in a Buddhist work entitled 提婆尊者大丈夫論 (Sanskrit ?).

⁸⁵ To build pagodas (properly stūpas) in which to preserve Buddha's relics, and to offer flowers before his shrine are the two chief acts of the original Buddhist worship. They who perform such service (even if they be but children piling up a little sand in the shape of a pagoda, provided it be done in a reverential spirit) will themselves attain to Buddhahood. Buddha is sometimes said to have had a golden body, and the lotus-seat is a poetical name for the state properly entitled Nirvāṇa.

⁸⁶ This paragraph is said by the commentator to be a free quotation from a Buddhist Sūtra entitled 華嚴經 ("The Sūtra of Ornaments." The full title in Chinese is 大方廣佛華嚴經 [sometimes 覺者 is substituted for 佛] and the original Sanskrit name apparently Mahāviprathā-Buddhagana-vyūha Sūtra). The "Wheel-Turning King" (輪轉王) is the Sanskrit Kākṛavartī Rāga, "the military conqueror and monarch of part or the whole of an universe."—(Eitel s. v.) But even his royal strength falls short of that of the earnest believer. The entire universe, according to the Buddhist cosmogony, consists of three thousand worlds, each provided with its sun and moon, its heavens and hells, etc., etc.

⁸⁷ The "Four Benefits" are said by the commentator to be:

I.—The benefits we receive from our parents.

II.—The benefits we receive from the mass of our fellow-creatures.

III.—The benefits we receive from the king.

IV.—The benefits we receive from the Precious Triad (Buddha, the Law and the Priesthood.)

⁸⁸ The sentiment of this clause, though perhaps obscure to the European

For the guidance of the young have I commented on the doctrine of Retribution, drawing both from the Inner and the Outer Canon :⁹⁹ let not those that read condemn these teachings, let not those that hear deride them.

reader unfamiliar with Buddhist terminology, is a beautiful one; for it warns the learner that care for his own future happiness does not constitute the whole duty of the religious man: rather must he labour to make all creation co-heirs of the inheritance of joy which he hopes himself to obtain. The "Six Paths" are the six conditions of sentient existence already enumerated in Note 82, and the expression therefore signifies the totality of living creatures.

⁹⁹内典外典. This phrase may be variously interpreted as signifying either the esoteric and exoteric Buddhist Scriptures, or else the Buddhist Scriptures on the one hand and the Chinese Classics on the other. The latter view best suits the present case; for (as will have been noticed) the author frequently quotes as authorities the "Record-of Rites" and other words of the Chinese sages. No words, however, could better resume his entire teaching than the phrase "For the Guidance of the young have I commented on the doctrine of Retribution;" that is to say, in words more intelligible to the ordinary European reader, "I have presented in easy language the chief precepts of Buddhism;" for the ground-work of the morals of this little treatise is entirely Buddhistic, as is but natural in the production of a priest of that religion. For the doctrine of "Retribution" (因果), "the fundamental dogma of Buddhistic metaphysics," see Eitel s. v. "Nidāna," Spence Hardy's observations on *Karma* ("Eastern Monarchism," pp. 5, 6, etc.), and Burnouf and the other European writers on Buddhism *passim*.

ON THE NEW MINERAL, REINITE.

BY DR. OTTO LUEDECKE.

TRANSLATED BY M. YOKOYAMA.

[Read June 14, 1881.]

Some doubts having been entertained about the true nature of the remarkable mineral found in Koma-gōri, Yamanashi Ken, which was taken to Germany by Dr. Rein, it was submitted to a careful examination, mineralogical as well as chemical, and thereby proved to be an entirely new species. A paper was published about it in Germany in the year 1879, which I was lately fortunate enough to read. The new mineral having been discovered in our own country, I thought it important to translate the paper into English, and thus make it better known, especially in Japan. As the greatest possible care has been taken as to the correctness of the translation, I hope the contents of the paper will give a good idea of the state of the question concerning the new mineral.

"Herr Dr. Rein, now professor in Marburg, has brought over to Germany a new mineral which he found at Kimbusan in Kai during his travels in Japan, to which Herr Prof. von Fritsch has already called the attention of mineralogists in our periodical (the 'Zeitschrift für gesammte Naturwissenschaft' published at Halle). However, as he was prevented by other work from giving a complete description of the mineral, he transferred that office to me.

"The new mineral occurs associated with large crystals of quartz, which commonly show the combination of ∞P , R , and \bar{R} . Most of these crystals are distinguished by well marked cleavage parallel to R ; others have an imperfect cleavage along the prism ∞P , 2. At a

meeting of the German Geological Society at Munich, Prof. von Fritsch exhibited a quartz twin from the same locality which has P 2 for its twinning plane, so that the principal axes include an angle of $84^{\circ} 33'$. Quartz and Reinite, as the new mineral is called by Herr Prof. von Fritsch, are often found grown together, and both have frequently a yellowish-brown coating of hydrous oxide of iron besides earthy particles of malachite on the quartz. The new mineral handed over to me is in the form of a single large crystal which shows a tetragonal pyramid, the lateral edges of which are all of equal length. They are about 45 millimetres long and are slightly broken at the angles. The terminal edges of the pyramid are slightly truncated by the pyramid of the second order. On account of its tetragonal form and high specific gravity, a sample of it was fused with bisulphate of potassium, and yielded a metallic acid soluble in water. My friend Prof. E. Schmidt then proved that this acid was tungstic acid, which is in combination with ferrous oxide.

" *Chemistry of Reinite.*—Before the blowpipe, tungstate of iron melts to a brownish black drossy enamel which is not magnetic; fused with salt of phosphorus in an oxidizing flame, it becomes brownish-red, in a reducing flame greyish-green, especially on addition of metallic tin. Its behaviour is, therefore, just that of tungstic acid in presence of much iron (*H. Rose, Handbook of Analytical Chemistry*). Fused with bisulphate of potassium, it is so completely decomposed that tungstate of potassium can be separated by means of water whilst the iron remains undissolved. A similar result is obtained with sodic carbonate. When it is treated with zinc and acid, the aqueous solution of the fused mass is colored blue, owing to the reduction of tungstic acid to dioxide of tungsten. By *aqua regia* it is also completely decomposed, the iron going into solution, and tungstic acid remaining as a yellow mass which colors a borax bead reddish brown in the oxidizing flame, and blue in the reducing flame. Hydrochloric, nitric, and sulphuric acids do not completely decompose the tungstate of iron, even when boiled with it.

" The quantitative estimation of the tungstic acid and protoxide of iron was performed in the laboratory of the University of this place (Halle) by my above mentioned friend Dr. E. Schmidt, professor of

chemistry. The mineral was heated with sodic carbonate and potassic nitrate, when the well known manganese reaction was not observed. The resulting potassic tungstate was separated by water and the remaining sesquioxide of iron dissolved in *aqua regia*.

"The estimation of tungstic acid was performed according to the method of Berzelius, as described in *Rose's Handbuch der analytischen Chemie*. Besides oxide of iron and tungstic acid, there were found traces of lime and magnesia and yellow spangles of a heavy metallic acid, insoluble in ammonia, and probably tantalic. The following table gives the mean result of two concordant determinations made upon 0.3617 grm., and 0.2685 grm. respectively.

	FOUND.	CALCULATED FOR FeO , WO_3 ,
Ferrous oxide	24.33	23.68
Tungstic oxide	75.47	76.32
Lime	traces	
Magnesia	"	
Tantal oxide	"	
	99.80	100.00

"Genther in the *Annals of Pharmacy and Chemistry* has described an artificially prepared tungstate of iron. It is a dark violet-brown powder of specific gravity 7.1, and consists of 24.32% FeO and 75.7% WO_3 , and exactly agrees with our native one. Hence in his *Chemical Compounds* he includes Reinite among the tungstates.

Hübnerite	MnWO_4
Wolframite	$(\text{MnFe})\text{WO}_4$
Reinite	FeWO_4

"*Its Crystallography*.—The crystal which was presented to me does not belong, as might have been expected, to the monoclinic system but to the tetragonal system, and in its external form much resembles scheelite (CaWO_4) and stolzite (PbWO_4); it shows the fundamental pyramid P . (111) slightly truncated by the pyramid of the second order $P\infty$ (101). The faces of the pyramid of the second order, however, are not all exposed to view, there being 3 in the upper half of the crystal, and only 2 in the lower half. The positions of the remaining faces are partly overgrown with quartz, and partly broken. On many

parts of the crystal there are other crystals of a smaller size whose principal axes are not parallel with that of the main crystal. The blackish-brown crystal is partially coated with a crust of hydrous oxide of iron. Measured with the contact goniometer, the terminal edges of P were found $=103^{\circ}-103^{\circ}50'$; those of $P:P\infty = 141\frac{1}{2}^{\circ}-142\frac{1}{4}^{\circ}$.

"For more accurate determination, a portion of the crystal with the terminal edges (111):(111) was detached, and the faces (111) and (111) were laid over with fine laminae of mica, and thus the angle was measured with a medium-sized Groth's reflecting goniometer. The average of six measurements was $103^{\circ} 32'$, from which we find, by calculation, the ratio of the tetragonal secondary axis a to the principal axis c to be 1:1.279. As one of the mica plates gave a strong reflection of light, a greater accuracy than 3 decimal places could not be obtained. Calculating from this axial ratio we get the angle of the lateral edges equal to $122^{\circ} 8'$, whilst measurements with the contact goniometer were rendered impossible owing to the fact that the place of the lateral edges was overgrown with numerous subindividuals having their principal axes running in various directions. The angle $P:P\infty$ was found equal to $141^{\circ} 46'$ from calculation, while measurements with the contact goniometer gave $141^{\circ} 15'-142^{\circ} 30'$.

"If we put the new mineral together with those crystallized tungstates which are already known, we obtain the following table:"

NAME.	CHEMICAL COMPOSITION.	CRYSTAL SYSTEM.	LATERAL EDGES OF P.
Scheelite	CaWO_4	tetragonal.	$130^{\circ} 33'$
Stolzite	PbWO_4	"	$131^{\circ} 23'$
Reinite	FeWO_4	"	$122^{\circ} 8'$
Hübnerite	MnWO_4	monoclinic (?)	—
Wolframite rich in manganese (Rammelsberg)	$\left\{ \begin{array}{l} \text{FeWO}_4 \\ 10 \text{ MnWO}_4 \end{array} \right.$	monoclinic	According to Des Cloizeaux $\beta=89^{\circ} 6'$ $a:b:c=$ $0.830:1:$ $0.8881.$
Wolframite of medium com- position	$\left\{ \begin{array}{l} 2 \text{ FeWO}_4 \\ 3 \text{ MnWO}_4 \end{array} \right.$	"	
Wolframite rich in iron.	$\left\{ \begin{array}{l} \text{MnWO}_4 \\ 4 \text{ FeWO}_4 \end{array} \right.$	"	

"Now as wolframite is made up of a mixture of isomorphous tungstates of iron and of manganese, and crystallizes in the monoclinic system, each of these tungstates must be in itself monoclinic; and we may therefore count Hübnerite (MnWO_4) among the minerals crystallizing in that system. On the other hand we know that Reinite crystallizes in the tetragonal system; hence with great probability we may assume that both compounds, viz., tungstate of iron and tungstate of manganese, are dimorphous, and that therefore a separate tetragonal tungstate of manganese may exist, although such has not been met with hitherto.

"*Other Physical Properties.*—The hardness of the mineral agrees with that of fluorite; its specific gravity is 6.640—the average of six determinations.

"The mineral is rather opaque, and blackish-brown; the streak is likewise brown; its lustre is dull metallic to glassy and it has a very imperfect cleavage along ∞P , and an uneven fracture.

"The mineral in very fine plates transmits a violet-brown light; it thus shows chromatic polarization. Splinters, when completely rotated between the 'nicols,' appear like tetragonal plates cut perpendicular to the principal axis.

"In some places the mineral encloses a yellowish-green mineral, which also shows chromatic polarization."

THE HISTORY OF JAPANESE COSTUME.

BY JOSIAH CONDER, M. R. I. B. A.

[Read June 20, 1881.]

II.—ARMOUR.

The forms exhibited in Japanese armour within the periods of trustworthy record appear to have been almost as changeless as those of the civil costume. As has been remarked with regard to the ceremonial dress, so we find in the armour,—the oldest examples remaining exhibit the greatest completeness, whilst those of later date are distinguished by omissions and irregularities in certain parts. The changes which took place during the development of European armour, remarkably that of France and England, can be distinctly traced to several causes. Such are,—the gradual improvement in the technique of steel, the continual changes in the style of the civil costume (to the fashions of which the armour always assimilated itself), and the development of the offensive arts, necessitating corresponding changes in the defensive dress, and rendering useless those forms which were designed for a less advanced warfare. Thus we have, during the few centuries of the middle ages, a complete change in European armour, from the hauberk of mail, resembling the robe of the 12th century, to the tight-fitting, puffed and ribbed steel suits of the Tudor period, in imitation of the slashed dresses of the day.

The armour of Japan, on the contrary, cannot be said in any way to have taken its shape from that of the civil costume, from which it entirely differed in its external form.

The introduction of guns into the warfare of the country was the cause of certain small changes in the armour, but these were insignificant compared with the revolutionary alterations in the defensive dress of Europe from the same cause. It has been stated above that the oldest remaining examples exhibit the greatest completeness in their parts, but by this it is of course not intended to imply that previous to the date of such remaining specimens there was no earlier form and no gradual development. The most ancient pieces of armour of which we know are chiefly from old temples, and profess an age of about six or seven centuries. For the earlier history of Japanese armour some information may be gathered from books and old pictures, from which sources the following facts have been gleaned by the writer.

The word *Yoroi*, now commonly used to denote armour in general, and especially the armour of the trunk, was not employed before the Yengi period (901-923), the word in use before this being *Kawara*. This word, now used for a roof-tile, is the same originally with *Kora*, the word used for the scales of a tortoise shell. Thus the ancient word used to indicate armour implies the scales or shell of the body. The body armour of the Kōnin period (810-824) appears to have been made of sheep skin or ox hide, from the account which we read of the equipment for the defeat of the rebels in Ōshiu at that time. Previously to this, historical references lead us to suppose that the armour was made of cloth, thickly padded with cotton, the exterior being often of highly ornamented silk or brocade. In the year 780 an order was issued by the government that leather armour should be used, because the kind hitherto worn was continually requiring repair. The order permitted the use of iron instead of leather, and advised that all armour should be gradually changed to metal. We read again that in the time of Kwammu Tennō (782-806), on the occasion of a war in Yezo, 2000 suits of leather armour were ordered, and a fixed allowance for armour was settled for each province, to be granted every three years. The helmet seems to be of later origin than the body armour, in the time of Jingō Kōgu (201-269) body armour of padded cloth being used, but

apparently no helmet. When first used the helmets appear to have been of padded silk or cloth, there being record of an order issued in the epoch Tembiô Hôji (757-765) for 60,000 cotton helmets made in the shape of Chinese helmets.

Iron helmets were brought into common use in the time of Kwammu Tennô, as indicated by an order for 2,900 given at that time; before this, however, metal helmets seem occasionally to have been worn. As far back as the time of Jingô Kôgu a retainer of the name of Take-no-uchi-no-sukune is said to have caused a metal suit of armour to be made; but this is mentioned as a marvel and seems to have been quite an exceptional case. During the wars of the Kônin period (810-824) one of the leaders wore a suit of iron armour called *Usugane-no-yoroi*, which created great notice; and there were many instances of the use of *Kogane-majiri-no-yoroi*, which was a mixture of leather and iron. The use of plates and scales of iron in armour seems to have gradually increased from this period until its employment was finally established in the epoch Tenshō (1573-1592), after the introduction of guns, which took place in the previous era Tembun. The complete use of metal plates caused a great increase in the weight of the armour, and this necessitated its curtailment and the omission of many parts which had previously belonged to it. From the time of such a change, the armour which had before been roomy and accommodating in shape and size had to be made carefully from measure so as to fit closely to the body. The particular alterations in special parts of the armour will be better explained after the description of the details referred to.

Much as the Japanese defensive attire differs in its general appearance from that of Europe, there are sufficient resemblances in the disposition of its principal parts to enable us to adopt in most cases the technical terms commonly used in such classifications. There are certain points in the human body which call for special protection, and bends and joints requiring freedom of motion, and consequently requiring a covering which shall not impede ready action. Again, these members in their movement leave exposed certain hollows which need screening by excrescent defences. Thus, the solution of the same problems leads to certain resemblances in the armours of different nations; and though we consider that of the

Japanese to have been unique and widely dissimilar from that of Mediaeval Europe, there are still in the subdivisions a correspondence sufficient to enable us to find equivalent English terms whereby to describe them.

The first article of attire which we shall describe is the.

KABUTO OR POT-HELMET.

A comparison of the Japanese defensive head-covering with European forms shews that the word "helmet," by which it is commonly translated, is, strictly speaking, misapplied. The *kabuto* neither forms the complete covering for the head and neck, nor rests for support upon the shoulders as does the European *heaume* or *helmet*. It resembles more the *chapel-de-fer* or pot-helmet used in the time of Charles I., having an attached *couvre-nuque* at the back, which continues well round to the sides of the face. The word "helmet," however, apart from its strictly technical meaning, has become so generally employed to denote any defensive head-covering that it will be convenient still to use it in our descriptions. The *Kabuto* consists of three principal parts,—the *Hachi* or skull, the *Shikoro*, an articulated *couvre-nuque*, and the *Maye-zashi* or peak. Also two curious curved wing pieces at the sides called *Fuki-gayeshi*, which sometimes form part of the *couvre-nuque* and sometimes are separate. In addition to this there are various fittings and furnishings, such as crests, badges, rings, cords and linings.

The *Hachi* or skull of the *Kabuto* was made in many different shapes, named according to the natural form they most resembled. Of these some were more or less hemispherical, such as *Dzu nari* and *Saku nari*, which were so called from their resemblance to the shape of the crown of the head, and *Momo nari*, or peach-shaped form. Another shape exists called *To-kamuri*, made in imitation of the ceremonial hat called *Kamuri*, described in a previous paper. A favourite form also was the *Kimen*—that of a demon's head. Others more or less approach the conical in form, such as the *Shii nari* or nut-shape, and the *Toppai*, which is a tall conical form, the sides flattening into a blade shape towards the top. Native writers ascribe to the long conical forms the advantage of more secure protection and greater coolness to the wearer, but consider them inconvenient for the

use of the bow or sword. Those fitting more closely to the head were considered less of an encumbrance, but were very oppressive to the wearer, causing great heat and dizziness. For the most part the *Hachi* is a hollow bowl of iron or hard lacquered leather, either wrought in one piece or made of strips strongly rivetted together. An exception, however, exists in the *Tatami kabuto* or folding-helmet, of which the skull is made of horizontal articulated rings, loosely joined in such a way that it could be shut down to a flattish form. The outer surface of the ordinary *Hachi* is provided with thin projecting ribs radiating from the centre of the crown to the outer edge. These raised ribs vary in number from seven to about 100. They are intended to turn the edge of any sharp weapon, and the greater their number the stronger the helmet is supposed to be. When the helmet is of iron the ribs are generally cast or wrought out of the same piece, but they are sometimes let in afterwards, being of some different material to that of the *Hachi* itself, such for example as *shakudô fukurin*, gold or silver; thus adding decoration as well as strength to the whole. In order to protect the metal skull from corrosion, it is covered mostly with some lacquer preparation. This sometimes receives a bright polish, but is oftener dull in colour and made to imitate the appearance of the natural unpolished metal. When lacquered, the process is a very long one, several layers of different preparations being used, each coat, when dry, being carefully rubbed with a polishing stone. The finishing colours are black, red, green, yellow, blue, rusted iron colour, gold, silver, tortoise shell, etc., etc.

In place of, or in addition to, the ribs, the surface of the *Hachi* is often covered with a number of elevated knobs or points called *Hoshi*, which somewhat resemble nail heads and are intended to break the force of a blow. Some helmets have no ribs, but the *Hoshi* only, and then they are called *Hoshi-kabuto*; but generally the two are combined, the studs being placed in rows of five, seven, or nine between the ribs. In later times they became merely ornamental, being made of gold or silver weakly attached, but in the best helmets they are as originally designed, of iron, rivetted right through the metal bowl. They have several different names, according to the shape of the nail-head and the method of fixing.

To the centre of the crown of the helmet is fixed a large metal socket called the *Tenku* or *Hachiman-za*, forming an opening apparently intended to ventilate the interior. The outer rim of this socket serves as an important part of the decoration, being embossed and engraved generally in conventional imitation of a chrysanthemum, from which it receives the name of *Kikuza*. This point also receives special attention, being considered particularly sacred to the god of war, as one of its names implies. This opening was sometimes protected from the wet by a silk cloth tied over the top of the helmet by strings attached to four metal knobs provided for the purpose. These metal prominences are called *Shi-ten-biyô* (the four-Déva knobs) by some writers, who attribute to them entirely a symbolical meaning, ignoring the practical explanation of their use. According to such a theory they were named *Bishamon Ten*, *Jikoku Ten*, *Kâmoku Ten*, *Zôchô Ten*. Whatever symbols may have been afterwards attached to them, their original purpose was evidently that of attaching some appendage.

The above parts completed the furnishing of an ordinary *Hachi*, but for those of higher ranks other ornaments were added in the form of quarterings in gold or silver. These are in bands extending from the *Hachiman-za* to the front and back, and sometimes also to the sides, so as to divide the helmet ornamentally into two, four, or eight parts. When only two lines are used, front and back, the ornamentation is called *Kata-jiro*; when four, it is called *Shihô-jiro*; when eight, the named used is *Happô-jiro*. These bands are often so broad as to leave but little of the black helmet showing between, and they are further ornamented sometimes by two or three raised lines, which are gilt and which end in small barbs or foliations named according to the shape they suggest. Such names are *Tokage-gashira* (lizard head), *Ichô-gashira* (*ichô*-leaf head).

On the four sides of the helmet are small holes fitted with metal eyes and called *Shida-no-ana*, from which thin strips of leather tied into a tight bow generally project, being used to connect with the inside cap.

The *Shikoro* or *couvre-nuque* is of various kinds. It consists generally of three, five, six, or seven laminated plates of metal of stiff leather of a curved form, each fastened to the next with silk cords. The

arrangement of these silk cords varies, sometimes being placed closely and sometimes with wider intervals, the general styles being similar to those more fully described under the word *Sode* (*epauliere*). In some the laminations are each composed of a number of *kozane* or small metal scales, from 100 to 136 in a row, strongly stitched together with the silk cord. The top plate of this *couvre-nuque* is firmly rivetted with metal rivets to the back of the *hachi*, and the lowest plate is generally lined with leather, so as to prevent its clattering noisily against the body armour as the wearer walks. This is called *Hishi-toji*, a name given to it in common with the lower plates of other portions of the armour, on account of the cross stitches of a star-shape in which the end of the silk cords are finished upon it.

The inside of the *Shikoro* is generally lacquered to a bright red, and this is said to be for the purpose of reflecting a fierce colour on to the face of the warrior¹.

At each side of the helmet is fixed a curious curved wing piece called *Fuki-gayeshi*, which is generally fastened to the edge of the two or three upper plates of the *shikoro* and curled round outwards, projecting at the side. They are generally covered with ornamented leather and a decorated border, the crest of the wearer in metal being rivetted on to the centre. The *Fuki-kayeshi* are sometimes formed out of the upper portion of the *couvre-nuque*, the edge of which is curled round for the purpose. In some instances the *Fuki-kayeshi* on the right side is made hinged, so as to be moveable, that it may not impede shooting with the bow.

The peak or frontlet of the helmet is called *Maye-zashi*, and differs slightly in shape in different styles. In some cases it slopes more downwards than in others, thus forming a more perfect shade for the eyes. It is made of a separate plate rivetted on to the front of the *Hachi*, and is covered generally with ornament leather of the same kind as the *Fuki-gayeshi*. To it is fixed a three-branched metal socket, into which certain ornamental additions to the helmet are fitted.

This socket is called the *Harai-date*. The underside of the *Maye-zashi* is gilt, lacquered red, or lined with red leather, the outer edge generally having a metal border.

¹ From this it seems that the mark-shaped vizor attached to the helmets was not always worn.

As stated above, the *Harai-date* receives three ornaments: one erect in the centre in the form of a dragon or crest of some kind and called *Mayedate*, and one branching out on each side like the horns of some animal, from which indeed it derives its name *Tsunomoto*. These are carved metal horn-shaped pieces, broad and thin, with foliated ends. Their purpose is entirely ornamental, being intended to give to the head-piece a grotesque appearance. The Japanese helmet throughout appears to be intended to impart to the wearer a fierce and monstrous appearance. This object may also be gathered from the descriptions of methods for lining the inside with red to reflect upon the face, and from the mask-shaped vizors designed in imitation of some real or imaginary monster.

The *Tsunomoto* vary very much in length, some being out of all proportion to the helmet.

At the back of the *hachi* is attached a handsome brass ring, from which is hung a thick tasselled silk cord, suspended behind in a large bow. This is called *Kasajirushi no kuwan*, on account of its being used occasionally for the attachment of the *Kasajirushi*, a white cloth badge worn in battle for purpose of distinguishing sides. Above this ring in some old helmets we find another similar ring intended for the point of attachment of the *Hôrô*.

The *Hôrô* is a large soft bag filled with cotton, or sometimes stretched only on a wicker-work frame, which was worn hung at the back by the cavalry to protect the rear from arrow shots.

In addition to the crests called *Mayedate* mentioned above, other badges were sometimes worn on the sides or back and called respectively *Wakidate* and *Ushirodate*. In the helmet said to have belonged to Yoshitsune and preserved in the temple of Kurama in Yamashiro, a large *shishi* is fixed upon the top.

The face is protected by a kind of vizor called *Menko* or *Saku-bô*, which is quite separate from the helmet and attached to it by strings. The *Menko* is a metal mask either covering the whole features, having holes for the eyes and nostrils, in which case it is named *Mempo*, or smaller, covering only the cheeks and the portion of the face below the nose, in which case it is named *Hô-ate*. These mask-shaped vizors have various distinguishing names, according to the countenance that

they represent. Such names are *Tsubame-bô* (swallow face), *Saru-bô* (monkey face), *Okina-men* (old man's face), *Shiwadzura* (wrinkled face), *Warawadzura* (young boy's face), *Onna-men* (women's face), *Kiyo* (female demon), *Moriyô* (ghost), *Tengu* and *Akuriyô* (evil demons), *Namban-bô* (southern barbarian's face), *Korai-bô* (Korean's face), etc., etc.

Most of these are intended to give a hideous and deceptive aspect to the wearer, and it is recommended that the older faced masks shall be used by young warriors and the younger ones by older men.

The *Menko* is generally made in one piece of metal, with the exception of the portion which covers the nose and upper lip, which is generally in a separate piece and attached by moveable rivets so that it can be removed if necessary for the purpose of eating and drinking. Sometimes the surface is inlaid with other metals, or it is gilt or lacquered upon the outside, the inside being generally lacquered red. Near the bottom of the mask, one or two small holes with short metal tubes are provided, being intended to form an outlet for perspiration. Sometimes deep wrinkles are formed in the modelling of the cheeks for the purpose of preventing an offensive weapon from slipping on the smooth metal surface and entering the eye hole. The metal lip pieces generally project forward to guard the mouth in the same manner. The upper lip, chin and cheeks are furnished with hair in keeping with the general character of the face represented in the mask, either black, red or grey. The hair used is wild boar's hair, horse hair or deer's hair. When real hair is not provided, a representation of hair is often painted upon the metal. Projecting metal knobs are provided for the attachment of the fastening cords.

Hung to the bottom of the *Menko* is a kind of *gorgette* called *Yodare-gane* or *Yodare-kake* or *Yen-ii*. It is generally, in construction and finish, similar to the *couvre-nuque*, consisting of laminated plates connected with cords and widening gradually towards the bottom. Sometimes it is made of leather or of chain-mail sewn upon leather or padded cloth.

The lining of the helmet consists of a soft cap of quilted silk or cloth called the *Uke bari*, *Uke ura* or *Uchi bari*. The edge of this bag-shaped lining is firmly fixed to the bottom of the inside of the *Hachi*, and it is made rather shallower than the inside of the helmet, so that

the weight of the metal does not fall immediately upon the head. To fulfil this purpose the cloth cap is strengthened on the inside with cross straps called *Chikara-gawa*. Attached to the lower part of the helmet are two strong silk cords for tying it under the chin.

HAN BURI—HALF-HELMET OR SKULL CAP.

Sometimes instead of the ordinary *Kabuto* was worn a metal or leather skull cap only covering a portion of the head, and called *Han buri*. Some covered only the crown of the head, being of a shallow cup shape. Others were deeper, protecting also the temples and being in the shape of a half skull. This form was made in several hinged plates for putting on easily, holes being left for the ears and for the tuft of hair on the top. The *Han buri* was often covered with leather, the ends of which were left for the purpose of tying under the chin. It is said that the *Han buri* was sometimes worn under and in addition to the *Mabuto*. It was generally used, however, for night sorties or by foraging parties, etc.

DÔ—CORSELET.

The term *Dô* includes the general armour of the trunk, with connected guards for the thighs and posterior. The name *Dô-maru* is used to indicate those metal corselets which are of a more or less tubular form, the front and back plate being in many cases continuous. One kind of *Dô-maru* consisted of a single piece of metal wrought into the form of a naked torso, having large protruding muscles, and was called *Hotoke-dô*. Such armour is generally black, and is said to have been taken from the images of the Indian saints. It is sometimes covered with a kind of shark skin, which sort of treatment is called *Same tsudzumi*. Other kinds were veneered with tortoise shell (*Bekkô-tsudzumi*), or covered with velvet (*Birôdo-tsudzumi*) or with silk (*Moji-tsudzumi*), or cane work, of which there were different kinds (*Anda-tsudzumi* and *Ajiro-gake*), or with leather and called *Kawa-tsudzumi*. The leather coverings were many and there were many distinguishing names, according to the leather employed; such as:—

<i>Kara-kawa tsudzumi</i>	.....	Chinese leather covering.
<i>Kin-kawa</i>	"	Gilt leather "
<i>Ai-gawa</i>	"	Blue leather "
<i>Nuri-kawa</i>	"	Lacquered leather "
<i>Mon-kawa</i>	"	Diapered leather "
<i>Some-gawa</i>	"	Dyed leather "
<i>Aka-gawa,</i>	"	Red leather "
<i>Kuro-kawa</i>	"	Black leather "
<i>Hana-gawa</i>	"	Flower-patterned leather "

In addition to this there were some *Dô-maru* which were of polished brass and others of iron, inlaid with coloured and precious metals.

Such continuous metal corselets required large openings for the arms, and were even then inconvenient from their want of flexibility, and were found useless for riding, as they caused great pain under the armpits.

The *Tatami-dô* or folding corselets, as their name signifies, were arranged in two or four plates hinged at the sides and fastening with clasps or strings. Those made in four plates are called *Shinai-kane-no dô*, and those in two plates are called *Nimai kana no dô*. Some of the *Tatami-dô* had curved and ridged breasts and rounded back, the two meeting over the shoulders and narrowing at the waist and resembling the European cuirass in shape. A name sometimes applied to this form was *Hato-mune-dô*, corresponding to our term *pigeon-breasted* corselet. These metal corselets were also sometimes called *Tate-nashi-dô* (cuirass without a shield), from the fact that they were supposed to have great strength in resisting the force of a sword or projectile, and thus rendered a shield unnecessary.

Another kind of *Dô-maru* was composed of separate scales of metal or hard leather, made to overlap and fastened by rivets, or connected by small strips of chain mail. This kind was called *Oke-gawa-dô*, but the exact reason for this appellation is disputed.

When the body armour was made of metal scales (*Kozane*) connected by silk or leather cords, as was the case in the more elaborate suits, the names used were *Kebiki Dô-maru* or *Sugake Dô-maru*, accord-

ing to the style of sewing. The cord-bound armour was considered to possess great elasticity, and was said to be cooler in hot weather and warmer in cold weather than the other kinds. The large number of silk or leather cords, however, would absorb much moisture in wet weather, and wore out somewhat quickly. Those generals who used such armour required also a change of suit.

HARAMAKI-DÔ.

This name was applied to a kind of body armour resembling the *Dômaru*, but not quite meeting behind, its elasticity allowing of its being tightened or extended, the gap, which could be increased or diminished, being closed by a separate piece called the *Sei-ita*. It is related that this kind of armour was invented first for the use of the Empress Jingô on the occasion of her expedition to Korea, when being *enceinte* it was necessary that some method of regulating the size of her body armour should be devised. Somewhat similar, but not to be confounded with this, is a kind of *Do* called *Shiwari-gusoku*, which also opened behind, but was made to meet and close by means of clasps and cords. Such armour was worn by the common soldiers.

As has been stated above, the most elaborate body armour was composed of metal scales connected by ornamental cords. The arrangements of small scales are always bounded by larger plates as borders and to these special names are applied. The front part of the *Dô* is provided at the top, just below the gorgette, with a narrow border-plate called the *Muna-ita* (breast plate).

The front of this is covered generally with ornamented leather, and has a metal edging. To it are fixed certain metal rings, with stout silk cords with buttons, to which are connected the shoulder braces (*Wata-gami*) which form part of the back plate. The *Muna-ita* is sometimes called the *Mika-dzuki-no-ita*, on account of its crescent-shaped form. When of metal the plate is called *Muna-kana-mono*. Immediately below the *Muna-ita* is a plate bearing the name of *Tsurubashiri-no-ita*, a term used principally in archery and meaning the meeting plate of the bow string. This portion of the cuirass is sometimes in one continuous plate, but often in the *Kozane-yoroi* it does not differ in construction from the

rest of the trunk armour. To the right side of this portion is fixed an ornamental ring, from which was suspended the cloth or the leader's staff.

The word *Ita*, signifying *plate*, is applied alike to the single metal plates which form the borderings of portions of the armour, and to the various rows of flexible overlapping scales which in some suits form the general body. Nearly every row had some special name, but we only describe here such as have some special function. That part of the corslet which covered the left side was called *Waki-ita* or *Imuke*, and it was connected to the back and front portions of the cuirass with cords or hinges. The top portion of this consisted of a curved piece fitting under the armpits, called the *Sentan-ita* or *Kana-mawari*. This was much hollowed out and never allowed to fit closely under the armpits, and was connected loosely by means of a strip of mail or cords to the rest of the *Waki-ita*, these precautions being taken to prevent pain whilst riding or using the arms. The *Sentan-ita* was ornamented in a similar way to the *Muna-ita*, generally with printed leather and a metal border. In order to facilitate the putting on of the *Dô*, the right side was made of a separate piece resembling the *Waki-date*, but detached and called the *Wai-date* or *Tsubo-ita*. This piece, when, as was often the case, it was separate from the rest, was suspended in position by cords passed round the neck, and was afterwards connected by cords to the rest of the corselet. This arrangement, however, only applies to certain kinds of *Dô*, in others the *Wai-date* being hinged to the rest, and in the kind called *Haramaki-dô* there is no separate side piece, but a detached piece fitting into the back instead. There are also corselets (generally of a more modern date) in which the *Waki-ita* and the *Wai-date* are both made in two divisions, half of each being jointed to the back plate and the other half to the front plate of the cuirass, in such a way that when worn, both opposite halves overlapped and were secured by cords. This latter style distinguishes the later suits from the older and more orthodox. The back portion of the cuirass, which is similar in most respects to the front portion, is called *oshitsuke* and is finished at the top with a border plate called *Moko-ita*, corresponding to the *Muna-ita* of the front. To this are fastened two curved braces passing over the shoulders for the purpose of connecting to the

breast-plate. These curved braces are called *Wata-gami*. They are made of leather, generally in two or three thicknesses, having mostly an ornamental facing of patterned leather, and a soft lining. Originally, as their name implies, they were made of padded cotton. They act as a support by means of which the armour is hung from the shoulders. In some old suits of armour two stiff crescent-shaped pieces are fixed to the top of the *Wata-gami*, forming a sort of "*garde collet*." They are omitted in the later armour, together with other appurtenances, such as the *Hato-wo-no-ita*, *Saka-ita* and *Shoji-no-ita*, to be afterwards described. Below the *Moko-ita*, just in a line with the *Sentan-ita* of the side plate, the back armour was furnished with a stiff plate formed by one or two rows of scales bound together by cross stitches (*hishinui*). This was called the *Sata-ita*, and it hung by loose loops to the *Moko-ita*, the next row of loose flexible scales being suspended from it in turn by silk cords. In the centre of this plate was fixed a large ornamental ring, from which hung a large silk cord with bow and tassels called the *Age-maki*. The *Saka-ita* naturally shelved out when the body was bent forward, and the use of the *Age-maki* is said to have been originally intended to correct this tendency by binding it down to the lower portions of the corslet. The *Age-maki*, however, seems afterwards to have degenerated into a merely ornamental appendage.

The *Age-maki* is of different colours, the *Shô-gun* generally wearing purple. The loops of the bow are utilised as points to which small cords coming from each *Sode* are attached. This was in order to prevent the *epaulières* (*sode*) from dropping out of position when the body was bent forward.

In addition to the *Age-maki*, the *Moko-ita* often carries a projecting metal socket called *Sashimono-gane*, through which passes the small banner which certain Knights Banneret carried at the back. The end rested in another socket lower down called the *Uke-mochi*.

KUSADZURI—TACES.

Forming a skirt to the corslet hang certain loose pieces called *Kusadzuri*, corresponding somewhat to the European *taces*. In the old example these *Kusadzuri* of the front and back plates were each in one continuous piece, widening out considerably towards the bottom and

each provided with a central slit opening to facilitate the movement of the legs. The *Kusadzuri* of the *Imuke* and *Wai-date* were quite separate up to their attachment with the trunk armour, and hung so as to slightly lap over those of the front and back. In later armour the *Kusadzuri* consisted of a number of separate *taces* hanging quite loosely and overlapping. The front portion was divided into three, the back three or four, and the side parts each had one piece. They were of laminated plates or scales, and were hung by a row of silk cords resembling in style the rest of the suit. This divisional arrangement undoubtedly rendered easier the movement of the legs, but the great facility with which they flapped about left the thigh and loins less protected.

Separate names were given to the individual *taces* according to their position.

SEN-DAN-NO-ITA	} —MAMELLIÈRES.
HATO-WO-NO-ITA	

Among the pieces which are only found in the oldest and most perfect specimens of armour are the *Sendan-no-ita* and the *Hato-wo-no-ita*, which were pieces intended to protect the front of the armpits, and thus corresponding in purpose, though not in form, with the *Mamellières* of European armour. The right and left defences differed in shape, and hence the difference in the names. The *Sendan-no-ita* was a narrow board composed of three plates or rows of scales connected together by cords and lined with leather. The size was generally three inches by nine inches long. The top is mostly ornamented with a narrow border plate, covered with patterned leather or embossed metal work. The whole is suspended from the *Watagami* by cords, protects the right armpit, hides the bow of the silk cord by which the body armour is fastened, and permits free action to the right arm. The *Hato-wo-no-ita* is somewhat smaller than the *Sendan-no-ita*, and consists of one oblong piece of metal or thick lacquered leather surrounded by a metal edging, its form spreading out towards the top into a foliated shape somewhat resembling a dove's tail in its general outline. It is covered generally with ornamented leather and is suspended from the *Watagami*, and protects the front of the left armpit. The reason for its being narrower

than the right hand piece is on account of the encumbrance that it would otherwise cause to the use of the bow and other weapons, the left arm being often held out straight to the front, whilst the right describes a somewhat wider circle.

The inside of the *Dô* or trunk armour is lined with padded silk, velvet or leather, but in inferior armour is merely lined with cloth lacquered or gilt.

GIYO-YÔ-ITA.

This is the name given to small leaf-shaped plates worn as *Mamellières* on both sides in place of the *Hato-wo-no-ita* and *Sendan-no-ita* in some armours. The name is derived from a Chinese word indicating the leaf of the *ichô* tree, which the *Giyo-yô-ita* is supposed to resemble in shape. This form is said to have been worn by officers of inferior rank to those who wore the above. The face is covered with ornamented leather, the inside being lined and being hung in place by cords attached.

SODE—EPAULIÈRE.

The next piece of armour by way or importance was the *Sode* or upper sleeve, corresponding somewhat to the European *Epaulière* being a protection for the shoulder and upper arm.

The *Sode*, however, by no means follows the shape of the arm or shoulder, being a broad flat piece very slightly convex and suspended by cords of leather tied to the *Watagami*, and kept in position and prevented from sliding forwards by silk cords which connected its back edge with the bow of the *Age-maki*; another connection passing round the chest tied together the front edges of both *Sode*.

It is generally composed of laminated plates or overlapping scales bound together by numerous silk or leather cords, and lined with leather. The top edge is provided with a narrow border of one single plate, with an edging slightly turned up so as to form a guard for the neck, this piece going by the name of *Kushi-gata* from its resemblance in shape to a Japanese hair comb. In addition to this top plate, which is generally covered with leather, there are generally four rows of scales called respectively 1st, 2nd, and 3rd plate and "cross stitched plate," *Hishi-nui-ita*.

The last mentioned term is applied to most of those parts of scale armour where the cords which are threaded through the upper scales are finished off in the last row in the form of cross stitches forming a star-shaped pattern. Rings are provided for the attachments of the cords which unite the *Sode* with the *Age-maki*.

The *Sode* forms an important decorative feature of the armour. The system of joining portions of the armour by small overlapping scales (*Kozane*) or laminations of leather connected with cords, gradually developed into a highly elaborate decoration. At first the connecting strings were of leather (*Kawa-odoshi*), but cords of coloured silk and Chinese damask were afterwards introduced and the sewing was used in a way capable of great varieties of arrangement. In a certain class of armour previously described, the greater part of the trunk was covered with ornamental leather, leaving for the display of the arrangement of coloured silk cord (*Odoshi-ge*) only the *Kusadzuri* and the *Sode*. Other suits had the *Odoshi-ge* used throughout the whole armour, but the *Sode*, being the most exposed, was generally that which fixed the style of ornament of the rest.

A curious explanation is given of the origin of the word *Odoshi-ge* which literally means "terrifying thread" and is applied to the coloured cord ornamentation of the armour. It is said that the gay appearance given to the armour by means of the coloured silk or leather had the effect of awing the enemy by a dazzling exterior, the wearer, however weak-hearted he might be, presenting thus a terrifying aspect to his foe. The arrangement of the *Odoshi-ge* differed according to the importance of the wearer, the cords being very thickly placed in the armour of persons of importance, but more scantily used for wearers of inferior rank. The full arrangement was called *Kebiki* and the coarse one *Ôarame*. As mentioned above, leather was sometimes used. It was softened, cut into thin strips and dyed of some bright colour, and the name given was applied either to the colour or quality of the leather used. Such names are *Ai-kawa*, *Kuro-kawa*, *Fusube-kawa* etc.

There are other special names which designate the colour and pattern of the cord, whether it be silk or leather. A few of such special names are:—

Hi-odoshi, applied to the use of cord of a deep crimson colour.

Beni-odoshi, another term for the use of red cord.

Arai-kawa-odoshi, light red leather corded armour.

Fushi-nawa-me-odoshi, a name given to a diagonally striped arrangement of cords alternately light-green, white and dark-blue, so called on account of a supposed resemblance in pattern to the cross plaits of a rope. This kind is only known in leather.

Ko-zakura-odoshi, light-blue cords of leather, closely arranged with a conventional cherry-blossom pattern in white stamped over it. There are several varieties of the *Ko-zakura-odoshi*.

Shida-kawa-odoshi, light-blue leather cord work with a diaper of fern leaves in white.

Nerinuki-odoshi, cords of silk thread braided in several colours, generally white and blue or white with some other colour.

There are a great number of the *Ito odoshi*, being differently named according to the different colours used. These are red, yellow, white, black, blue, light-green, dark-blue, mauve, etc. Other arrangements exist in which cords of two colours are arranged so as to form a diagonal, V-shaped, or checkered pattern. The *Iroiro-odoshi* is so called when cords of several colours (generally five) are used in some variegated arrangement. There are still other arrangements when one colour is used in different shades, so as to shade off the colour from deep to light. Such an arrangement is the *Moyegi-nioi-odoshi*, where green is used in a shaded arrangement. Again, different colours are sometimes used in horizontal bands.

Much difference of opinion exists as to the adoption of any particular colours in the silk cord-work employed in the armour of different important families. Some writers assert that to the Taira family belonged purple, to the Fujiwara light-green, and to the Tachi-bana yellow, this being fixed in the time of Seiwa Tennô (859-876). Other authors, however, deny any such fixed rules, and it appears that whether or not any laws existed, they were not retained for any length of time. The colour adopted seems mostly to have been a matter of caprice, its choice being determined sometimes by certain arbitrary rules of luck which existed with reference to the "star" of the wearer. Thus we read that for the man of the "nature of wood," according to the laws of soothsaying, black was the lucky colour, etc., etc.

In addition to the laminated *sode*, highly decorated with silk threads as above, there were other kinds more or less used and distinguished by their particular shape or material.

Of these the *Kusari-sode* was made of one oblong piece of leather or padded cloth, covered with chain mail, having a narrow plate at the top, *Kamuri-ita*, to stiffen it and form its point of attachment.

The *Kawara-sode* consisted of one large oblong plate, with two moveable plates at the bottom attached by leather cords.

The *Nanban-sode* or *Gaku-sode* was a kind of *sode* resembling in shape the framed tablets hung in front of temples and gateways under the eaves. The central portion was of one plate of metal, upon which was lacquered a dragon or some other device. The border, which resembled the frame of a tablet, was of some bright ornamental metal.

The *Maru-sode*, as the name implies, was round, or rather oval, instead of the ordinary oblong shape. It generally consisted of one plate decorated upon the outer surface with some pattern and the crest. A favourite ornament was a conventional wave pattern.

The *Ha-sode* and *Taka-no-ha-sode* resembled in shape a bird's wing.

The *Hiyotan-sode* was in outline the shape of a gourd.

The *Ki-no-ha-sode* was shaped like a leaf.

KOTE—AVANT BRAS AND BRASSARTS.

The *Kote* is that portion of the armour which forms a tight defensive sleeve for the whole of each arm, occupying in one piece the place held in European armour by the brassarts, *condières* and *avant bras*. It consists of a close-fitting sleeve of padded cloth, silk or leather, widening at the mouth, where it fits over the shoulder, and is tied by strings round the chest. The *Kote* is covered in parts with mail and additional metal plates, and terminates in a metal hand-guard or semi-gauntlet called the *Tetsu-gai*. These metal defences are applied only to the outer portion of the arm, the inside portion towards the body not requiring such protection. It is upon the inside that the cloth or leather which forms the body of the sleeve is laced up tightly with leather or silk cords to within a few inches of the mouth-

piece. The uppermost plate of *Kote* covering the shoulder below the *Sode* is called the *Kamuri-ita*, and to this are attached the three cords, two of which are tied round the chest, while one connects with the string of the opposite *Kote*. Immediately below this, for the protection of the principal muscles of the upper part of the arm, is a large metal plate or a collection of scales connected by mail, called the *Gaku-no-ita*. At the point of the elbow is a circular metal plate forming a kind of couidière and called the *Hiji-gane*. The lower part of the fore-arm is provided with a plate called the *Ikada*, which sometimes consists of long parallel splint-like strips of metal connected by chain mail, and sometimes is in one piece of pierced and embossed metal. Attached to the bottom of the same piece of armour is the *Tetsugai*, which generally consists of a rounded plate following the shape of the back of the hand above the knuckles, lined with leather and having loops in the lining through which to pass one or two fingers. In addition to this, leather gloves are worn. In some of the older and more complete suits the hand-guard has metal finger-pieces separately attached by a chain to the body of the gauntlet. The idea followed in the arrangement of the parts of the *Kote* is evidently to leave the motion of the arm as free as possible, employing plates of metal sewn on to the flexible sleeve only in order to protect the most fleshy parts of the arm. There are several distinct kinds of *Kote*, of which the following are the principal :—

Tsutsu-gote is the special name given to that kind of *Kote* of which the whole is covered with mail, the outer portion of the upper and lower arm being further protected by large parallel splints or curved metal plates sewn on, so as leave the elbow joint free and covered only by the mail.

Tsugi-gote is that kind of *Kote* which, being covered with chain mail, has its upper portion further protected by a wide piece loosely attached to the shoulder, in all respects resembling the *Sode*, but smaller. The lower arm is provided with the ordinary metal plate, *avant bras* and gauntlet.

Shino-gote, *Yetchiu-gote*, and *Awase-gote* are names all applied to one particular kind of *Kote*, the difference in the names indicating merely slight alterations in the modes of tying. This kind is entirely

covered with chain mail, with small strips of metal averaging about two inches long by half an inch wide, sewn over it at regular distances.

Oshi-no-gote is the name used to indicate that kind of *kote* which has the outer part of the fore-arm covered with thin splint-shaped plates and strips of chain mail alternately.

Tominaga-gote is the distinguishing name used when both the *kote* are connected together by a silk or leather collar-piece instead of, as usual, being tied round the body separately by cords.

Hansho-gote is the name applied to a kind of avant-bras or curtailed *Kote*, consisting of three longitudinal plates connected with chain mail and lined with padded cloth, silk or leather. It is tied round the fore-arm.

Ya-gote is the particular name given to a *Kote* of padded silk or brocade, having no metal furnishings, and used specially for archery.

There are other names used to denote slight differences in make, but for the most part they indicate no great departure from the kinds before mentioned.

HAI-DATE—CUISSARTS.

The name *Hai-date* is applied to that part of the armour corresponding to the *cuissearts* in European armour, protecting the thighs but hanging loosely like a double apron piece. The upper portion consists of a continuous slashed apron piece of silk or leather, with strong bands for tying round the belly, this portion being hidden by the body armour. The lower portions hang down in the form of two strong plates for the protection of the thighs. Among the distinguishing names for different kinds of *Hai-date* are :—

hTe *Ita-hai-date*, which has for the protection of each thigh a continuous metal plate mostly composed of numerous square scales sewn over a leather or silk lining, with leather cords. The surface is often engraved or inlaid in gold with a crest or some device. When worn, the plates of the *Hai-date* lie more or less flatly over the front, having a certain amount of flexibility but not closely following the curve of the thigh.

The *Odoshi-hai-date*, of which the thigh pieces are made of metal scales overlapping and fastened with silk thread in the same manner as the *Sode* and *Kusadsuri*. Either the *Kebiki* or *Sugake* kind of sewing is used, there being three rows of scales and a bottom border (*hishi-ita*). The upper apron-portion, which is always called *Koshi-tsuke-no-nô*, is of damask or silk, with the crest of the wearer woven or embroidered upon it, and in all respects treated as the *Hakama*, having slits at the sides to be used as pockets and called *Muchi-gashi-no-ana*.

The *Igo-hai-date*, of which the lower portion is covered with very small plates sewn upon a cloth or silk body. This kind is worn mostly by horsemen, as being more flexible and less inconvenient in riding.

The *Yechiu-hai-date*, which forms a complete covering for both the front and back of the thighs, the thigh-pieces being of chain mail with small metal plates attached. The upper portion consists of a regular "*Hakama*" of plaited silk. On the inside are various bands of leather used to stiffen the whole and suspend the heavy weight of the lower portions. There are several different kinds of the *Yechiu-hai-date*.

The *Hodo-hai-date*, which is so called from the resemblance in shape which its upper apron-shaped portion bears to the *Hodo-bata*, a religious flag. It is somewhat similar to the *Odoshi-hai-date* but more complicated, the thigh pieces being in several overlapping flaps. The upper flap of each thigh is in one plate, composed of closely arranged scales, and under this, hanging considerably below the larger plate and as a fringe, are four small separate pieces. These lower pieces hang over the knees, where their detached form allows free movement.

SUNE-ATE—GREAVES OR GREVIÈRES.

The defences for the lower parts of the legs, corresponding to the greaves of European armour, are called *Sune-ate*, of which there are various kinds. For the most part they are of curved plates following the modelling of the calf of the leg, being fastened by clasps of strings, very much like the old Greek and Roman greaves. In some cases they are of more flexible material, more resembling thick padded gaiters.

The *Bishamon-sune-ate* is the special name given to that kind of *grevière* which is composed of three continuous metal plates bound together, the central one being prolonged upwards for the protection of the knee cap, this upper portion being called the *Kakudzuri*. The metal plates are lacquered in different ways, or are engraved or inlaid.

Shinotate-sune-ate.—This kind is composed of a number of long parallel metal plates divided by strips of chain mail.

Tsutsu-sune-ate.—This kind is composed of two curved metal plates hinged in the middle, having no lining, but worn over the inner leggings, which act as a soft padding. To this kind the *Kokudzuri* is not fixed, but is sometimes added separately.

Niwo-sune-ate.—This kind is the same as the former, but is lined.

Kiyahan-sune-ate.—This kind is made entirely of chain mail sewn upon a padded lining, and has no *Kakudzuri*. The lower portion ends in a rounded pad without mail, which partly covers the foot.

Sudare-sune-ate.—This kind is covered alternately with strips of chain mail and long metal plates, about eight in number.

The greaves, when of long narrow plates and mail intermixed, had those plates at the inner ankle curtailed in order not to cause pain or inconvenience in walking. The *Kokudzuri* were generally in one of two principal shapes, named respectively *Yama-gata* and *Juwo-gashira*.

KUTSU—SHOES.

As a covering for the feet were worn shoes with curved pointed toes, completing the dress of an armed warrior. These were, however, only worn during ceremonies or by the leaders whilst riding, the ordinary straw sandals being preferred for marching or fighting dismounted. The soles of these shoes were of stiff leather and the uppers of bear's skin, lined inside with handsome silk brocade.

KATA-ATE.

The *Kata-ate* were pieces of some soft padded material put over each shoulder to cover the top of the *Watagami*. Sometimes they were

both united to the *Yeri-mawari*, which was a kind of gorgette going all round the neck, made of padded cloth or leather covered with metal plates or shark skin.

WAKI-BIKI.

The *Waki-biki*, which were sometimes called *Waki-date*, consisted of two pieces of padded material, sometimes covered with chain mail, which were hung to the sides under the armpits to form an extra protection under the body armour or to form a padding for it. Some of the *Waki-biki* are of *odoshi*, some of chain mail with small *shino*, some of large metal plates hinged together. They are mostly rounded at the bottom and always hollowed at the top, leaving two horns provided with cords and buttons for fixing round the shoulders.

MANJIYUWA.

The *Manjiyuwa* was the name given to a combination in one piece of the *Kata-ate*, *Yeri-mawari* and *Waki-biki*.

JIM-BAORI—HABARD OR SURCOAT.

The *Jim-baori* was a kind of habard or surcoat worn over the armour for purposes of display. Some kinds have large sleeves and are called *Sode-baori*; some have merely openings for the arms and are called *Hampi*. The shape is similar to the ordinary Japanese *haori*, being, however, slit up behind for convenience in riding. It is generally made of some highly ornamented fabric,—silk, damask, or brocade.

The *Karako-baori* was a curious kind of surcoat, having no sleeves but a curious frill round the arm openings.

The clothes worn under the armour will be separately described.

HÔRÔ.

A curious additional defence was worn over the armour, which, as far as we know, has no equivalent in the defences of any other nation, and which went by the name of *Hôri*. It consisted of a large cloth or

bag, general attached loosely to the back of mounted warriors so as to fill with the wind and form a large pillow-shaped projection at the back while riding. Sometimes it was kept filled with air by means of a light oval core of wicker-work attached firmly to the back of the armour. This curious device was supposed to shield the wearer from arrows shot from the side or behind.

The ordinary length is nearly six feet, and made out of about five strips carefully sewn together lengthwise and strengthened by plaits. Upon the centre, top and bottom the crest of the wearer is worked, and both the upper and lower edge are provided with a fringe. Near the top and bottom, each side is provided with a cord, the top cords being attached either to the helmet or to the large ring at the back of the body armour, which is otherwise used for the *Agemaki* or handsome silk tassels. In some paintings *hōri* is shown as supported upon a rod fixed into a socket on the back; but no particular authority is known for this mode. The lower cords were fastened round the waist. In some cases the *hōri* was worn at the front, hung from the helmet across to the forehead of the horse, being kept in this position by long cords tying it to the stirrups. It thus formed a screen to the face and front of the body, considerably impeding vision.

SODE JIRUSHI—SLEEVE-BADGE.

The *Sode jirushi* was a small silk or cotton cloth about the same length as the *sode*, which was attached to it by cords tied to two rings fixed to the *sode*. Its other end was left loose and allowed to flutter in the wind. It generally bore some crest or the name of Hachiman, the god of war, in some fixed colour. The device upon this badge was fixed by the general, being different on different occasions, as it was used for the purpose of distinguishing friends and foes, and only put on on the eve of some action.

The *Kasa-jirushi* was a similar cloth badge attached to the hat or helmet, for which a ring was provided on the helmet. It was somewhat longer than the *Sode jirushi*, measuring about one foot four inches in length. Sometimes, instead of being hung by a ring to the back of the helmet, it was attached to a small rod about one foot eight inches long, fixed vertically to the front of the helmet. That of the general was

usually of some rich bracadé, with the device in gold or silver thread. That of the common soldiers was of white silk or cloth, with the device in black.

Another kind of the *Kasa-jirushi* distinguished by the name of *Chiu-kasa-jirushi*, is similar to the former, but has cords at its bottom end by which it is attached loosely to the bottom of the helmet. The top edge is held up above the front of the helmet by means of a metal rod with three prongs. This kind was made for use in stormy weather.

The *Sashi-mano* was a small banner worn attached to the end of a long rod, which was fixed into sockets at the back of the armour, reaching higher than the head behind. Such banners were not worn before the Tensho period (1573).

Much as the different armours herebefore described vary in the degree of ornament bestowed upon them, it is not supposed that the ordinary soldiers wore defences anything like them in completeness.

The armour worn commonly by the lower class of retainers was called *Nuko* or *Ban-gusoku*, and in earlier times, *Tonoi-no-Haramaki*.

Such armour consisted generally of a *capet-de-fer* or small helmet and a corselet, for the rest the soldier being clothed in usual travelling dress, with gaiters and sandals. Of the common helmet there were three kinds, namely *Kusari-kabuto* (chain mail helmet), *Kawagasa* (leather hat) and *Akagano-gasa* (copper hat). The *Kusari-kabuto* or *Tatami-kabuto* was made of small pieces of iron plate, connected with double chain mail sewn on to padded cloth or leather stuff, both the skull-piece and the *couvre-nuque* being made in the same way. The shape as nearly as possible resembled the ordinary padded fire-bonnet still worn by firemen. There was a hole in the top for the cue of hair to protrude from. The *shikoro* or *couvre-nuque* was slit up in the middle. The *Kawagasa* was a leather hat which was best made of a particular kind of leather called *Nari-gasa*, and the best class of hat thus made was considered superior to the mail helmet. The leather was perfectly stiff, and was well lacquered on both sides so as to produce a hard, tough material, which in the best kinds would stand the test of long immersion in water. The crown was generally brought to a point and the brim was broad. The usual colour outside was black, with a gilt crest in the centre.

The *Akagane-gasa* or copper hat was of the same shape as the leather hat and was considered more durable. There is said to have been one special kind much used in the eastern provinces, of which the crown was covered with a revolving piece so as to move when struck by a thrust or missile. A copper hat is also said to have been used, if needs occurred, as a pan for cooking, which added to its utility in time of war.

Of the corselets worn by the lower ranks were the *Sewari-gusoku*, the *Uchi-awase-gusoku*, the *Tatami-gusoku* and the *Hara-ate* or *Hara-ate-gawa*. Of these the *Sewari-gusoku* was a leather corselet made in large pieces of *Neri-kawa* lacquered black. It was fitted and laced together to form one piece, opening in the back, for which latter reason it was sometimes called *Yoroi-haramaki*. Unlike the *haramaki* of the better armour, however, there was no separate piece to fill in this opening, which was closed either by clasps or by laced silk cords. There were several different shapes, of which the pigeon-breasted one was considered the best. The trunk was generally short and had five *kusadzuri* (taces) attached, which were also short. Such suits could easily be adapted to any wearer, and were generally made full for this purpose, being tightened up by lacing and by a tight girdle wound round the waist. Upon the black body the crest of the lord was marked in gold or red.

The *Uchi-awase-gusoku* only differs from the former in that front and back are separated, being joined at both sides after putting on. Such armour is more portable and easy to pack.

Of the *Tatami-gusoku* there were two kinds; one of iron and the other of leather. As the name implies, such corselets were made to double up in a similar way to the *Tatami-dô*.

The *Hara-ate* or *Hara-ate-gawa* was a leather corselet made of *Neri-kawa*, and similar in shape to the fire-jacket worn now by firemen.

MINUTES OF MEETINGS.

Tokiyo, Oct. 12, 1880.

A General Meeting was held at the Sho-hei-kuwan, Seido, Tokyo, on Tuesday, Oct. 12, 1880, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

The Librarian reported the receipt of various presents, a list of which is appended. Thanks were ordered.

A paper by Mr. John J. Quin on "The Lacquer Industry of Japan" read by the Corresponding Secretary, in the absence of the author. A vote of thanks was passed to the author. The meeting was then adjourned.

PRESENTS.

I. Exchanges:—

American Geographical Society; Bulletin: Nos. 3, 4, 1897.

do. do. 1, 1880.

American Oriental Society; Journal: Vol. X., No. 2.

Anthracite Coal Fields of Pennsylvania; by P. W. Sheaffer, Esq.

Anthropological Institute of Great Britain and Ireland; Journal: IX., No. 4.

Asiatic Society of Bengal; Journal: Vol. XLIX., Pt. 2.

do. Proceedings: Nos. 4, 5, 1880.

Bataviaasch Genootschap; Notulen, Deel. XXVII., Nos. 2, 3, 4.

do. Verhandlingen, Deel. XXXIX., XL.

Celestial Empire. Vol. XV., Nos. 23, 24, 25.

do. Vol. XVI., Nos. 1, 2, 4, 5, 7, 8, 9, 10, 11.

China Review, Vol. VIII., No. 6, and Vol. IX., No. 1.

Chinese Recorder, Vol. XI., No. 4.

Cosmos, by Guido Cora, Vol. VI., Nos. 1, 2, 3, 1880.

Geographical Survey of India; Records: Vol., XIII. Pls. 2, 3.

Imperial Russian Geographical Society; Bulletin: 2 Nos.

Japan Weekly Mail, Vol. IV., Nos. 27-41.

La Litterature des Japonais; par Léon de Rosny.

Monthly Exports, Prices Current, and Trade Report; London: July and August, 1888.

New South Wales, Council of Education; Report: 1878.

Oesterreichische Monatsschrift für den Orient; Nos. 5, 6, 7, 8, 1880.

Roman-Urdu Journal, Nos. 23, 24, 25, 1880.

Royal Asiatic Society, Bombay Branch; Journal: Vol. XIV., No. 37.

do. North China Branch, Journal: No. 14.

Royal Society of Edinburgh, Proceedings: 1878-1879.

do. New South Wales, Journal and Proceedings: Vol. XII.

Royal Geographical Society; Proceedings: Vol. II., Nos. 5, 6, 7, 8, 1880.

Sociedad Geografica de Madrid; Boletín: Tom. VIII., Nos. 4, 5, 6.

Société de Géographie; Bulletin: March and April, 1880.

Tijdschrift voor Indische Taal, Land en Volkenkund, Deel. XXV., Aflevering, 4, 5, 6, 1878.

Tijdschrift voor Indische Taal, Land en Volkenkund, Deel. XXVI., Aflevering, 1, 1880.

Several catalogues of books from different publishing houses.

II. Donations:—

Bōrō-Boudour (Great Buddha) dans l'île de Java; publié d'après les ordres de Son Excellence le Ministre des Colonies, par le Dr. C. Leémans.

do. in Dutch.

393 Plates in folio, illustrating the above.

17 Plates in quarto do. do.

2 Japanese Metric and English Weights and Measures, by E. Kinch, Esq.

1 Indien in Wort und Bild; von E. Schlagintweit: specimen sheet.

Tokyo, Nov. 9, 1880.

A General Meeting was held at the Sho-hei-kuwan, Seido, Tokyo, on Tuesday, Nov. 9, 1880, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

It was announced that Lady Mary Thompson had been elected a member of the society; also that Mr. James Main Dixon had been appointed Treasurer, in place of Mr. Shand, who had declined office; also that Messrs. E. G. Holtham and H. T. Terry had been elected members of Council to fill the vacancies caused by the departure of Messrs. Bramsen and Gubbins from Japan.

The Corresponding Secretary, in the absence of the author, read a paper by Mr. B. H. Chamberlain entitled "Notes on the Dialects spoken in Ahidzu."

Mr. R. W. Atkinson read a paper by Mr. T. Ishikawa, graduate of the University of Tokiyo, on "*Kaki-no-shibu*."

Some discussion followed the reading of both papers, and the thanks of the society were voted to the authors.

The Librarian exhibited and described a number of plates illustrative of the Temple of Borô-boudour in Java, recently presented to the society by the Dutch Government. The meeting was then adjourned.

Tokiyo, Dec. 14, 1880.

A General meeting was held at the Sho-hei-kuwan, Seido, Tokiyo, on Tuesday, Dec. 14, 1880, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

It was announced that Mr. Naito Kanda and Professor H. M. Paul had been elected members of the society.

The Librarian reported the receipt of various presents, a list of which is appended. Thanks were ordered.

The following papers were read:—

"Notes on Some Recent Earthquakes," by Prof. J. A. Ewing.

"Evidences of the Glacial Period in Japan," by Prof. John Milne.

"The Mineral Springs of Ashi-no-ya, in the Hakone Mountains," by Dr. A. J. C. Geerts.

The meeting was then adjourned.

PRESENTS.

1. Exchanges:—

Anthropological Institute of Great Britain and Ireland; Journal: Vol. X., No. 1.

Asiatic Society of Bengal; Journal: Vol. XLIX., pt. 2, Nos. 1, 2.

Bibliothèque Orientale et Linguistique de Jules Thonnier; Catalogue. Celestial Empire; Vol. XVI., Nos. 12-20.

China Review; Vol. IX., No. 2.

Chinese Recorder and Missionary Journal; Vol. XI., No. 5.

Japan Weekly Mail; Vol. IV., Nos. 42-49.

Museum of Comparative Zoölogy, Harvard College; Bulletin; July, 1880.

Oesterreichische Monatsschrift für den Orient; Sept. 15, 1880.

Roman-Urdu Journal; Vol. III., Nos. 26, 28.

Royal Geographical Society; Proceedings: Vol. II., Nos 9, 10.

Sociedad Geografica de Madrid; Boletin: Tom. IX., Nos. 1. 2.

Société de Géographie; Bulletin: Juin, 1880.

II. Donation:—

Diagram of the Prospects of the Anthracite Coal Trade of Pennsylvania;
presented by P. H. Sheaffer Esq.

Tokiyo, Jan. 11, 1881.

A General Meeting was held at the Sho-hei-kuwan, Saido, Tokiyo, on Tuesday, Jan. 11, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

The Treasures announced that subscriptions for the year 1881 were now due.

Mr. J. M. Dixon exhibited a piece of painted faience in the form of a plate, and gave a version of the story which was the subject of the painting.

A paper by Dr. A. J. C. Geerts, entitled "Analyses of Ten Japanese Mineral Spring Waters," was laid on the table. The Corresponding Secretary, in the absence of the authors, read the following papers:—

"Historical Notes on Nagasaki," by W. A. Woolley, Esq.

"Hideyoshi's Invasion of Korea; Chapter II.—The Retreat," by W. G. Aston, Esq.

The meeting was then adjourned.

MINUTES OF MEETINGS.

TOKYO, Feb. 8th, 1881.

A General Meeting was held at the house of the President, Kōbu-dai-gakkō, on Tuesday, Feb. 8th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

It was announced that Mr. James M. Gardiner had been elected a member of the Society.

The Corresponding Secretary reported the receipt of various presents, a list of which is appended. Thanks were ordered.

Capt. F. Brinkley, R. A., read a paper on "The History of Japanese Ceramics," after which the members and visitors visited the museum of the college to examine the author's collection of ceramics. There was no other business.

PRESENTS.

Repertorio Sinico-Giapponese, compilato dai Professori A. Severini e C. Puini, fasc. IV, completing the work.

Japan nach Reisen und Studien im Auftrage der Königlich Preussischen Regierung dargestellt von J. J. Rein. 1 Band.

Pennsylvania Magazine of History and Biography, Nos. 1 to 3 of Vol. IV.

Proceedings of the Royal Geographical Society, Vol. II. No. 12.

Bulletin of the Museum of Comparative Zoölogy, Harvard, Vol. VI, Nos. 8-11.

Annual Report of the Curator of the Museum of Comparative Zoölogy, Harvard.

Records of the Geological Survey of India, Vol. XIII, pt. 4.

Bulletin de la Société de Géographie for Aug. 1880.

Monatsschrift für den Orient, Nov. 1880.

Journal of the Asiatic Society of Bengal, Vol. XLIX, pt. 1, No. 3.

Proceedings of the Asiatic Society of Bengal, Nos. 7 and 8, July and August, 1880.

China Review, Vol. IX, No. 3.

Roman-Urdu Journal, Vol. III, No. 20.

On a new Seismometer, by Dr. G. Wagener.

Act and Bull (Numismatic and Antiquarian Society of Philadelphia).

The Celestial Empire, 9, 16, 23, 30 Dec., 1880, and 6, 13, 20 Jan., 1881.

TOKYO, March 8th, 1881.

A General Meeting was held at the Shō-hei-kuwan, Seidō, Tokiyo, on Tuesday, March 8th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

It was announced that the Rev. W. C. Davison and General T. B. Van Buren had been elected members.

Professor J. A. Ewing exhibited a glass plate containing a record of an earthquake which had occurred at 12.20 p.m. on the day of the meeting, and explained that the record showed there had been a change in the direction of vibration during the shock.

The Corresponding Secretary, in the absence of the author, read a paper by Mr. George Lewis entitled "A Memorandum on the Coleopterous Genus *Damaster*, with notes on six species or forms in it."

The Rev. W. B. Wright read the first part of a translation from the Japanese of Arai Hakuseki "on the Capture and captivity of Pere Giovan Battista Sidotti, Missionary to Japan."

The meeting was then adjourned.

TOKYO, April 12th, 1881.

A General Meeting was held at the Shō-hei-kuwan, Seidō, Tokiyo, on Tuesday April 12th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

The Recording Secretary, acting on behalf of the Council, gave notice that he should propose an amendment to the Constitution at the next general meeting, to the effect that the present Rule XI be abolished and the following Rule substituted for it:—"The officers and Council shall hold office for one year and shall be elected by ballot at the Annual Meeting. Persons who have previously served are open to re-election."

The Librarian reported the receipt of various presents, a list of which is appended. Thanks were ordered.

The Corresponding Secretary intimated that Messrs. Trübner & Co., the London agents for the sale of the Society's Transactions, had expressed their desire to procure copies of Vol. II, now out of print, and that they were willing to pay a sum in excess of the publishing price for them. Persons having spare copies were therefore requested to communicate with the Corresponding Secretary.

Dr. H. Faulds exhibited some petrified specimens from Kaga, alleged to have been petrified within the last ten years by the action of warm water.

The Rev. W. B. Wright read the second part of a translation from the Japanese of Arai Hakuseki "on the Capture and Captivity of Père Giovan Battista Sidotti."

Capt. J. M. James read a paper entitled "Notes on the Rosaries (*Jiu-dzu*) as used by the different sects of Buddhists in Japan."

The meeting was then adjourned.

PRESENTS.

American Geographical Society; Bulletin, No. 5, 1879.

American Oriental Society. Proceedings, Oct., 1880.

American Philosophical Society; two papers by Henry Phillips, jr.

Asiatic Society of Bengal; Journal, Vol. 49, pt. I, No. 4; 1880.

" " " " " 49, pt. II, No. 3; 1880.

" " " Proceedings, Nos. 9-10, 1880; No. 1, 1881.

Belfast Natural History and Philosophical Society; Proceedings, 1878-1880.

Boston Society of Natural History; Proceedings, Vol. XIX and XX, pts. 1, 4.

Celestial Empire, Vol. 16, Nos. 21, 25, and Vol. 17, Nos. 1-12.

China Review, Vol. VIII, No. 5; Vol. IX, Nos. 1, 2, 4.

Chinese Recorder, Vol. XI, No. 6; Vol. XII, No. 1.

Cosmos di Guido Cora, Tom. VI, Nos. 4, 6.

Harvard College Museum of Comparative Zoology; Bulletin, Vol. VI, Nos. 4-7; Vol. VII, Nos. 1, 2.

H. I. M. Customs Report of Japan; Feb., 1881.

Imperial Russian Geographical Society; Bulletin.

Numismatic and Antiquarian Society of Philadelphia, Pa.; Proceedings, 1880.

Numismatic and Antiquarian Society of Philadelphia, Pa.; Papers by H. Phillips, jr.

Roman-Urdu Journal, Vol. III, Nos. 30, 31.

Royal Geographical Society; Proceedings, Vol. II, No. 11.

" " " " " III, Nos. 1, 2,

Royal Dublin Society; Proceedings, Vol. I, II.

" " " Transactions, Vol. I and Vol. II, pts. 1, 2.

Sociedad de Geografia de Madrid; Boletin, Tom. IX, Nos. 3-6.

Société de Géographie; Bulletin, Juillet-Novembre, 1880.

Société des Etudes Japonaises, Chinoises, Tartares, etc.; Mémoires, Tom. II, pt. 2.

The Pennsylvania Magazine of History and Biography; Vol. IV, Nos. 1-3.

The Japan Weekly Mail, Vol. IV, Nos. 46-53, and Vol. V, Nos. 1-14.

Tōkixō, May 10th, 1881.

A General Meeting was held at the Sho-hei-kuwan, Seido. Tokiyo, on Tuesday, May 10th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

The Librarian reported the receipt of various presents, a list of which is appended. Thanks were ordered.

It was announced that the Rev. A. D. Gring had been elected a member of the Society and the Rev. W. B. Wright a member of Council.

The Recording Secretary, acting on behalf of the Council, moved that the existing Rule XI of the Constitution be abolished, and the following Rule substituted for it:—"The Officers and Council shall hold office for one year, and shall be elected by ballot at the Annual Meeting. Persons who have previously served are open to re-election."

The motion was seconded by the Rev. C. T. Blanchet and carried unanimously.

Mr. E. M. Satow read a paper entitled "Ancient Japanese Rituals, pt. III."

The meeting was then adjourned.

PRESENTS.

Agricultural and Horticultural Society of India; Journal, Vol. VI, pt. 3.

American Geographical Society; Bulletin, No. 2, 1880.

Asiatic Society of Bengal; Journal, Vol. XLIX, pt. 2, No. 4.

" " " Proceedings, No. 2, 1881.

Celestial Empire, Vol. XVII, Nos. 14, 15, 17.

Geological Survey of India; Records, Vol. XIV, pt. 1.

Oesterreichische Monatsschrift für den Orient, March 15, 1881.

Roman-Urdu Journal, Vol. IV, No. 32.

Royal Geographical Society; Proceedings, Vol III, pt. 3.

Royal Society of Tasmania; Proceedings, 1879.

Sociedad Geografica de Madrid; Boletin, Tom. X, No. 1.

Société de Géographie; Bulletin, Dec. 1880.

Société Imperiale Russe de Géographie, Vols. XVI, XVII.

Documents sur l'Asie Centrale, par C. Imbault-Huart; from the Director of the School of Oriental Languages.

Japanese Pottery, edited, by A. W. Franks; from the author.

Paper on Old American Almanacs, by Henry Phillips, jr; from the author.

ERRATA IN PART I, VOL. IX.

Page 44, line 8; for "one-sixtieth" read "one six-hundredth."

" " line 14; for "sixty" read "six hundred."

MINUTES OF MEETINGS.

TOKIYO, June 14th, 1881.

A General Meeting was held at the Shō-hei-kuwan, Seidō, Tokiyō, on Tuesday, June 14th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

It was announced that General A. C. Jones had been elected a member of the Society.

The Librarian reported the receipt of various presents, a list of which is appended. Thanks were ordered.

The following papers were read:—

"Hideyoshi's Invasion of Korea: Part III.—Negotiation," by W.G. Aston, Esq.

"A translation of the Dou-zhi-ken, or Teachings for the Young," by B. H. Chamberlain, Esq.

"A Translation of a paper by Dr. Otto Luedecke on the new Mineral, Reinite," by M. Yokoyama, Esq., communicated by Dr. D. Brauns.

The meeting was then adjourned.

PRESENTS.

American Geographical Society; Bulletin, Nos. 1 and 3, 1881.

Asiatic Society of Bengal; Proceedings, No. 3, March, 1881.

" " " " Journal, Vol. L., pt. I, No. 1; pt. II., No. 1.
Celestial Empire; Vol. XVII., Nos. 16, 18-22.

China Review; Vol. IX., No. 5.

Cosmos di Guido Cora; Vol. VI., pts. 7, 8.

Harvard College Museum of Comparative Zoölogy; Bulletin, Vol. VIII.

Japan Mail; Vol. V., Nos. 16-23.

Natural History of Montreal; Constitution and By-Laws.

" " " " Annual Report, 1857.

Horticultural Society of Montreal; List of Premiums, 1881.

Province de Manitoba et Territoire du Nord-Ouest du Canada, 1878.

New South Wales; Council of Education, Report, 1879.

" " " Dept. of Mines, Annual Report, 1878.

" " " " " " " 1879.

" " " " " " Maps for Annual Report, 1879.

" " " Royal Society, Journal and Proceedings, Vol. XIII.

Roman-Urdu Journal; Vol. IV., Nos. 33, 34, 1881.

Royal Geographical Society; Proceedings, April, 1881.

Russian Imperial Geographical Society; Bulletin, 1881.

Sociedad de Geografica de Madrid; Boletin, Feb., 1881.

The Canadian Antiquarian, Vol. IX., No. 3, Jan., 1881; presented by

Major Huguet-Latour, M. A. N. T., etc., etc.

Ville-Marie; Annuaire et supplement, Jan. 1881.

Geology of the Environs of Tōkiyō, by Dr. D. Brauns, presented by the author.

Japan nach Reisen und Studien, by Dr. J. J. Rein; presented by the author.

A new form of Pendulum Seismograph, by J. A. Ewing; presented by the author.

TōKIYō, June 28th, 1881.

The Annual Meeting was held at the Shō-kei-kuwan, Seidō, Tōkiyō, on Tuesday, June 28th, 1881, Dr. Divers, President, in the chair.

The Minutes of the preceding meeting were read and approved.

The Librarian reported the receipt of various presents a list of which is appended. Thanks were ordered.

The President announced the receipt of a medal commemorative of the accomplishment of the North-Asian passage by the "Vega," presented by the Swedish Royal Academy of Sciences. A vote of thanks to the donors was passed.

The Rev. W. B. Wright read Part III. of his translation from the Japanese of Arai Hakuseki on "The Capture and captivity of Père Giovan Battista Sidotti."

Mr. J. Conder read a paper on "Japanese Armour," and exhibited a number of specimens.

... The Report of the Council for the Session 1880-81 was read by the Recording Secretary, and adopted without discussion.

Officers and Members of Council for the ensuing year were then elected by ballot, with the following result:—

President: J. Gordon Kennedy, Esq.; Vice-Presidents: Rev. J. L. Amerman, A. J. C. Geerts, Esq.; Corresponding Secretary: E. M. Satow, Esq.; Recording Secretaries: C.H. Dallas, Esq., J.A. Ewing, Esq.; Treasurer: J. M. Dixon, Esq.; Librarian: Rev. C. T. Blanchet; Members of Council: B. H. Chamberlain, Esq., Dr. Edward Divers, Y. Duer, Esq., Rev. C. S. Eby, Rev. J.H. Gulick, D. D., A. G. S. Hawes, Esq., John Milne, Esq., W.J.S. Shand, Esq., T. Walsh, Esq.

A vote of thanks was passed to the retiring Council and the meeting was then adjourned.

PRESENT..

Anthropological Institute of Great Britain and Ireland; Journal.

Celestial Empire, Vol. XVII., Nos. 23, 24.

Asiatic Society of Bengal; Journal.

Geological Survey of India; Records.

Japan Weekly Mail; Vol. V., Nos. 24, 25.

Sociedad de Geografica de Madrid; Boletin.

Société de Géographie de Rochefort; Bulletin.

Tōkiyō Dai Gaku Memoirs of Scientific Department; Nos. 4, 5.

Medal of the Expedition around the Northern Coast of Asia, by Prof. Nordenskjöld and Capt. Pallander; presented by the Royal Swedish Academy of Sciences.

Sanskrit Grammar, by W. D. Whitney; presented by the author.

REPORT OF THE COUNCIL FOR THE SESSION 1880-81.

During the past session the activity of the Society has in some measure diminished, owing to the decrease in the number of resident members and the temporary absence of others, among whom were several frequent contributors to its Transactions. Nevertheless, the usual number of general meetings have been in Tōkiyō, at which twenty papers were read, showing a slight numerical excess over the preceding session. A list of these papers will be found in Appendix A.

Eight new members have been elected, and the same number have resigned. Of those who cease to be Resident Members in consequence of their leaving the country permanently, six have been placed at their own request on the list of Non-Resident Members. The number of members temporarily absent is twelve.

The Council have much pleasure in announcing that a considerable demand has sprung up in Europe for the publications of the Society, which would probably grow larger if the means could be found of reprinting the earlier volumes (1 to 3), which are almost exhausted (vol 2, and vol. 3, part 1, have been out of print for some time past). This might be accomplished if a sufficient number of members, say thirty, were to express their willingness to subscribe for copies of each volume, and the remainder of the cost of reprinting would, it is hoped, be covered by increased sales to the public.

Appendix B contains a list of the Journals, Transactions and Proceedings received from various learned bodies in different parts of the world, in exchange for the Society's Transactions.

In Appendix C will be found a list of additions made to the library during the past year by donation.

The Council beg leave to tender their thanks to the Minister of Education for the continued use of a large hall at the Shō-kei-kuwan for the General Meetings of the Society in Tōkiyō, and to the Proprietors of the Grand Hotel for the offer of a room for meetings to be held at Yokohama.

The following annual Balance sheet shows the present condition of the Society's finances.

ASIATIC SOCIETY OF JAPAN in Account with J. M. DIXON.

	Dr.	1880.	Cr.
1880.			
Aug. 11.	To R. Meiklejohn & Co.:	June 22.	Balance from last year
	For printing, binding, etc., Vol. VIII., pt. 2 \$197.35	"	Sale of Transactions per Kelly & Co. Yokohama
Oct. 8.	" Corresponding Secretary E. M. Satow:	Oct. 1.	do. do.
	For current disbursements	Nov. 22.	do. do.
Dec. 2.	" R. Meiklejohn & Co.:	1881.	
	For printing, binding, etc., Vol. VIII., pt. 3 236.57	Jan. 11.	do. do. Lane, Crawford & Co.
Dec. 16.	" Corresponding Secretary E. M. Satow:	May 11.	do. do. Corresponding Secretary ..
	For current disbursements	June 22.	do. do. Recording Secretary Tokiyo.
1881.		" 28.	Subscriptions:— Resident Members:
Feb. 12.	" Subscription for <i>Celestial Empire</i>		9 for 1880
Mar. 7.	" Corresponding Secretary E. M. Satow:		88 for 1881
	For current disbursements		Non-Resident Members:
Mar. 8.	" R. Meiklejohn & Co.:		3 for 1879
	For printing, binding, etc., Vol. VIII., pt. 4 108.96		4 for 1880
	For 300 circulars		8 for 1881
	For printing, binding, etc., Vol. IX., pt. 1 4.00		Entrance fees, to
	For 2 receipt books	" 28.	Sale of Transactions per Librarian
June 23.	" Recording Secretary for Tokiyo J. A. Ewing:	"	
"	For current disbursements		
"	" Treasurer J. M. Dixon:		
	For current disbursements		
June 24.	" Librarian Rev. C. T. Blanchet:		
	For current disbursements		
June 28.	" Balance at the Hongkong and Shanghai		
	Bank, Yokohama		
	" Balance in cash		
	Total		\$1,269.80

The above account has been examined and found to be correct.

J. MILNE and EDWARD DIVERS, *Auditors.*

APPENDIX A.

LIST OF PAPERS READ DURING THE SESSION 1880-1.

- The Lacquer Industry of Japan; by J. J. Quin.
 Notes on the Dialects spoken in Ahidzu; by Basil Hall Chamberlain.
 On Kaki-no-shibu; by I. Ishikawa, graduate of the University of Tokiyō.
 Notes on some Recent Earthquakes; by J. A. Ewing, B. Sc., F. R. S. E.
 Evidence of the Glacial Period in Japan; by J. Milne, F. G. S.
 The Mineral Spring of Ashi-no-yu, in the Hakone Mountains; by Dr. A. J. C. Geerts.
 Analyses of Ten Japanese Mineral Spring Waters; by Dr. A. J. C. Geerts.
 Historical Notes on Nagasaki; by W. A. Woolley.
 Hideyoshi's Invasion of Korea: Chapter II—The Retreat, and Chapter III—Negotiation; by W. G. Aston.
 The History of Japanese Ceramics; by Capt. F. Brinkley, R. A.
 A Memorandum on the Coleopterous Genus *Damaster*; by George Lewis.
 The Capture and Captivity of Pere Giovan Battista Sidotti, Parts I, II, and III; by the Rev. W. B. Wright
 Descriptive Notes on the Rosaries (*Jiu-dzu*), as used by the different sects of Buddhists in Japan; by J. M. James.
 Ancient Japanese Rituals; by E. M. Satow.
 A translation of the "Dou-zhi-keu," or Teachings for the Young; by Basil Hall Chamberlain.
 A Translation of a paper by Dr. Otto Luedecke on the new Mineral, Reinite; by M. Yokoyama.
 The History of Japanese Costume: II.—Armour; by J. Conder, M. R. I. B. A.

APPENDIX B.

EXCHANGES.

- Agricultural and Horticultural Society of India; Journal.
 American Geographical Society; Bulletin.
 American Literary Record; Trübner.
 American Oriental Society; Proceedings.
 American Philosophical Society; Proceedings.
 Anthropological Institute of Great Britain and Ireland; Journal.
 Asiatic Society of Bengal; Journal.
 do. do. do. Proceedings.
 Bataviaasch Genootschap; Verhandlingen.
 do. do. Notulen.

- Belfast Natural History and Philosophical Society; Proceedings.
 Boston Society of Natural Philosophy; Proceedings.
 Celestial Empire; Shanghai.
 China Review; Hong Kong.
 Chinese Recorder and Missionary Journal; Shanghai.
 Cosmos; di Guido Cora.
 Customs Report (H. I. M. of Japan) February, 1881.
 Geological Survey of India; Records.
 Harvard College Museum of Comparative Zoölogy; Bulletin.
 Imperial Russian Geographical Society; Bulletin.
 Japan Weekly Mail; Yokohama.
 New South Wales, Council of Education; Report, 1879.
 do. Department of Mines; Annual Report, 1878-9.
 do. do. do. Maps for Annual Report, 1879.
 do. Royal Society; Journal and Proceedings.
 Numismatic and Antiquarian Society, Philadelphia; Act. and Bull.
 do. do. do. do. Proceedings.
 Oesterreichische Monatsschrift für den Orient.
 Pennsylvania Magazine of History and Biography.
 Repertorio Sinico-Giapponese; A. Severini, C. Puini.
 Royal Asiatic Society, Bombay; Journal.
 do. do. do. Edinburgh; Proceedings.
 do. do. do. North China Branch; Journal.
 Royal Dublin Society; Scientific Proceedings.
 do. do. do. do. Translations.
 Royal Geographical Society; Proceedings.
 Royal Society of Tasmania; Proceedings.
 Sociedad Geografica de Madrid; Boletin.
 Société des Etudes Japonaises, Chinoises, Tartares, etc.; Mémoires.
 Société de Géographie; Bulletin.
 Société de Géographie de Rochefort; Bulletin.
 Tôkiyô Dai Gaku, Scientific Department; Memoirs, Nos. 4, 5.

APPENDIX C.

BOOKS PRESENTED TO THE SOCIETY.

- Bôro-Budur in Java, by Dr. C. Leemans, in Dutch.
 do. do. do. do. in French.
 do. do. illustrations, 8 vols. folio; presented by the Govern-
 ment of Java.
 Canadian Antiquarian (the); presented by Major Huguet-Latour.

Documents sur l'Asie Centrale, per C. Imbault Huart.

Geology of the Environs of Tôkiyô, by Dr. D. Brauns; presented by the author.

Japan nach Reisen und Studien, by Dr. J. J. Rein; presented by the author.

Japanese Pottery, by A. W. Franks; presented by the author.

Sanskrit Grammar (A), by Prof D. W. Whitney; presented by the author.

PAMPHLETS AND LEAFLETS.

Anthracite coal fields of Pennsylvania, by P. W. Sheaffer.

Diagrams of the Progress of the Anthracite Coal Trade of Pennsylvania, by P. W. Sheaffer; presented by the author.

Horticultural Society of Montreal, List of Premiums; presented by Major Huguet-Latour.

Japanese Metric System in English Weights and Measures; by E. Kinch, Esq., presented by the author.

Natural History of Montreal; Constitution and By-Laws.

do. do. do. Annual Report 1857; presented by Major Huguet-Latour.

Old American Almanacs, Prospectus by Dr. H. Phillips, Jr.; presented by the author.

Pendulum Seismograph (a new form) by J. A. Ewing, Esq.; presented by the author.

Province de Manitoba et Territoire du Nord-Ouest du Canada; presented by Major Huguet-Latour.

Ville-Marie—Annuaire et Supplément; presented by Major Huguet-Latour.

LIST OF MEMBERS.*

HONORARY MEMBERS.

Admiral Sir C. Shadwell, K. C. B.
Captain Arthur, R. N.
S. Wells Williams, LL. D.
Sir Rutherford Alcock, K. C. B.
Sir Thomas F. Wade, K. C. B.
Professor Geo. E. Day, Yale College, U. S. A.
Professor W. D. Whitney, New Haven, U. S. A.
Hon. Geo. P. Marsh, Rome.
A. W. Franks, British Museum.
Professor J. J. Rein, Marburg, Germany.
Baron A. Nordenskjöld, Stockholm.
Rev. E. W. Syle, D. D.
Rev. Joseph Edkins, D. D.

RESIDENT MEMBERS.

[The Black, Roman, and Italic types indicate residence at Yokohama, in Tōkiyō, and at the *Outports* and *in the Interior*. Members changing their addresses are requested to notify the Correspondingly Secretary.]

Amerman, Rev. J. L.
Aston, W. G.
Beadon, R.
Begbie, J.

Bellamy, A.
Bingham, Hon. J. A.
Bisset, J.
Blanchet, Rev, C. T.

*Corrected to November, 1881.

- Bramsen, W. B.
 Brauns, Dr. D.
 Brinkley, Capt. F., R. A.
 Brooke, J. H.
 Brown, A. R.
 Chamberlain, B. H.
 Chaplin, W. S.
 Cocking, S.
 Conder, J.
 Cox, W. D.
 Dallas, C. H.
 Davission, Rev. W.
 Divers, Ed., M. D.
 Dixon, J. M.
 Duer, Yeend
 Dyer, H.
 Eaton, Isaac
 Eby, Rev. C. S.
 Eusden, R.
 Ewing, J. A.
 Farley, G., Jr.
 Faulds, H., M. D.
 Fenollosa, E.
 Fischer, Ed.
 Flowers, M. O.
 Fraser, J. A.
 Gardiner, J. McD.
 Gay, A. O.
 Geerts, A. J. C.
 Glover, T. B.
 Gowland, W. B.
 Gray, T.
 Greene, Rev. D. C.
 Gregory, G. E.
 Gribble, H.
 Gring, Rev. A. D.
 Gubbins, J. H.
 Hall, J. C.
 Harris, Rev. M. O.
 Haswell, E. W.
 Hattori, Ichiji
 Hawes, A. G. S.
 Hellyer, T. W.
 Hepburn, J. C., M. D., LL.D.
 Hodges, G. J. L.
 Holtham, E. G.
 Houghton, W. A.
 Howe, H. A.
 Hunt, H. J.
 Irwin, R. W.
 James, F. S.
 Jaudon, Peyton
 Jones, Gen. A. C.
 Kanda, Naibu.
 Keil, O.
 Kennedy, J. G.
 Kingdon, N. P.
 Kirkwood, M.
 Knipping, E.
 Lill, y, R.
 Longford, J. H.
 McDonald, Rev. Dr. D.
 MacLagan, R.
 Mason, L. W.
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